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An Assessment of Florida's Remaining  
Coastal Upland Natural Communities:  
Southeast Florida

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Florida Natural Areas Inventory  
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INTRODUCTION. A total of sixty-six sites in natural vegetation and, in most cases, of 10 or more acres extent, were visited along the sandy barrier island coast from the northern Brevard County line to the tip of Cape Florida opposite Miami in Dade County (Figure 1a,b). Twenty-eight of these sites are entirely in public ownership, and the remaining thirty-eight wholly or partially in private ownership. If the sites are broken out by county (Table 1) it is immediately apparent that there is a gradient from north to south in number of natural sites wholly or partially in private ownership with Brevard having the highest number (13); Indian River, St Lucie, and Martin next with 8,7, and 6 respectively, and then a steep drop to Palm Beach, Broward, and Dade with 2,2, and 0 respectively.

VEGETATION. Coastal vegetation in this region can generally be classified into three communities which grade into one another as one moves inland from the shore. The herbaceous beach dune community nearest the beach is replaced by the shrubby strand community which in turn grades into a forest (maritime hammock) community as plant height becomes less suppressed by the killing of the terminal buds by salt spray off the ocean.

Plant species composition of the strand and hammock communities is not uniform along the entire region, but can be divided into two categories: temperate, usually oak-dominated, communities with tropical species in the understory, and tropical communities with little or no oak. The temperate/tropical type occurs from the northern limit of the region south to about Martin County from which point south the purely tropical type predominates. Tropical hammocks do occur north of Martin County, however, on isolated areas with shelly substrates. An indicator species for the temperate/tropical type is nakedwood (*Myrcianthes fragrans*) which was not seen in coastal communities south of St Lucie County (Table 4) or north of Volusia. A woody plant with smooth orange bark and small, aromatic leaves, it can occur either as a shrub in the strand community or as a small understory tree in the maritime hammock. Another change that occurs at Martin County is a shift in the dominant seaward-most species in the strand from saw palmetto (*Serenoa repens*) to sea grape (*Coccoloba uvifera*) to the south.

A fourth community, scrub, occurs near the coast in Brevard and northern Palm Beach Counties. This shrubby community is widespread on mainland Florida, but rare on Atlantic coast barrier islands. It usually occurs inland from the strand community on higher ridges and is distinguished from strand by the absence of tropical species and the presence of sand live oak and myrtle oak (*Quercus geminata* and *Q. myrtifolia*) instead of dwarfed live oak (*Quercus virginiana*). Its occurrence is thought to be a reflection of more acid sands due to the leaching of shell from the older beach ridge deposits (Kurz, 1942).

RARE PLANTS. Five species of plants listed as rare by the FNAI are found along this sector of the coast: prickly apple (*Cereus gracilis*), a columnar cactus found in disturbed portions of strand community in southern Brevard County, silver palm (*Coccothrinax argentata*), a shrubby palm in hammock understories in southern Palm Beach to Dade Counties, beach jacquemontia (*Jacquemontia reclinata*), a trailing vine in grassy openings in the strand community found from Palm Beach to Dade Counties, Florida lantana (*Lantana depressa* var *floridana*), a low shrub found in beach dune communities and edges of strand and hammock from Volusia to Dade Counties, and Biscayne prickly-ash (*Zanthoxylum coriaceum*), an understory tree in hammocks in Broward and Dade Counties. Of these the most endangered are Florida lantana and beach jacquemontia, since they occur only on this coast and are known from fewer than 10 sites. Both are being considered by the Center for Plant Conservation for bringing into cultivation to conserve genetic diversity of the populations.

PURPOSE AND METHODS. The purpose of this project was to identify and assess the quality of natural communities in parcels greater than 20 acres along the barrier islands of

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the southeast coast of Florida from Brevard to Dade Counties. Natural sites were identified using the latest available aerial photography from the Florida Department of Transportation. Communities were ranked on the basis of species diversity, structure, degree of disturbance, and degree of exotic invasion as A - good, B - moderate, C - poor and A+ - outstanding. All community and species information obtained in field surveys of the sites were mapped and entered into the FNAI database. In-house information on each site was combined with that obtained in the field and condensed into one-page summaries for each site. Attached to each site summary is a copy of the U.S.G.S. quad with the site outlined and the portion in public/private ownership indicated. For purposes of comparison rough estimates of the number of acres in each community type were made for each site (Table 4,5). These figures should not be used for any more precise purpose than order-of-magnitude comparisons.

**REPRESENTATION OF COMMUNITIES ON PUBLIC LANDS.** The beach dune community is of limited extent along this coastline, since most of the coast is receding. It is well represented on public lands in those limited areas where the coast is prograding, either naturally as at Cape Canaveral (BREV-1, 2), or where sand is trapped on the north side of jetties as at Sebastian Inlet S.R.A. (BREV-18) and Fort Pierce Inlet S.R.A. (STLU-3), or where the beaches have been re-nourished as at St. Lucie Inlet S.R.A. (MART-5), John U. Lloyd S.R.A. (BROW-4), and Cape Florida S.R.A. (DADE-3).

Strand is a transitional community between beach dune and hammock and its extent is dependent on the topography inland from the foredune - if the land is level or rising, salt spray can penetrate farther inland and the strand zone will be broader; if the land slopes down behind a foredune ridge, strand may be confined to seaward slope and crest of the foredune itself. The saw palmetto variant of strand is well-represented in the 12-mile-long coast of Canaveral National Seashore (BREV-1) and on the Dollman Tract (STLU-9); the sea grape variant at Radnor Park (PALM-4), MacArthur Beach State Park (PALM-6), and North Beach County Park (BROW-5).

The temperate-canopy hammock prevalent from Brevard to Martin Counties is relatively poorly represented on public lands, having only small acreages at Sebastian Inlet S.R.A. (BREV-18) and Avalon (STLU-1). The tropical hammock, which occupied the central portion of the barrier islands in Palm Beach, Broward, and Dade counties, has been reduced by urbanization to only a few isolated sites, most of which are in public ownership. The three best developed stands at Gumbo Limbo Nature Center (PALM-12), Hugh Taylor Birch S.R.A. (BROW-2), and Bartlett Estate (BROW-3) are isolated from their natural transitions to adjacent communities. These transitions are still found to hammocks at MacArthur Beach S. R. A. (PALM-6) and Boynton Beach (PALM-9).

Coastal grassland and xeric hammock are well represented on Cape Canaveral (BREV-2,3). The Brevard scrub is represented at Coconut Point North (BREV-7) and a larger and more disturbed example at Seagrape Manor North (BREV-9). The Palm Beach county scrub is represented at Radnor Park by a larger disturbed piece and at Loggerhead Park (PALM-5) by a smaller piece broken up by trails. Size is known to be an important determinant of whether a given scrub can support scrub jays.

**REPRESENTATION OF COMMUNITIES ON PRIVATE LANDS.** Most extensive beach dune communities are in public ownership. Three excellent examples of this community are in private ownership - at Sebastian Inlet North (BREV-17) which is continuous with the beach dune community at Sebastian Inlet S.R.A. (BREV-18), at Sailfish Point (MART-4) which has been building seaward with sand trapped by the north jetty at St Lucie Inlet, and the Posner Tract (BROW-5) where beach dune species have invaded an area cleared of strand.

Excellent examples of temperate/tropical hammock and its associated strand are found at

eight sites, three in Brevard County (BREV-4,13,17) and five in Indian River County (INDI-2,3,4,5,6). Tropical hammock, on the other hand, is represented in the main portion of its range only on large estates on Jupiter Island (MART-7,8) and Hillsboro Beach (BROW-1). In the latter case, invasion of a twining *Philodendron* sp. has so blanketed the ground under the hammock that tree reproduction is questionable. Isolated small stands of tropical hammock are found north of its principal range on shelly substrates in St Lucie County (STLU-2,6, and 8).

**RATING OF SITES.** Criteria used to rate sites as "excellent" or "good" (Tables 4,5) were 1) presence of communities ranked A or A+, 2) presence of natural transitions between communities from ocean to lagoon, 3) minimum size - sites less than 20 acres were not included unless, 4) presence of an outstanding example of a relatively rare community (scrub, tropical hammock). Sites meeting any one of these criteria are listed as "excellent".

**DISCUSSION OF BEST SITES.** From the above discussion it is clear that the major community NOT now represented on publicly owned lands is the temperate/tropical hammock. Among the sites in private ownership rated as excellent, eight have substantial acreages of good quality occurrences of this community. Among those eight, the largest and one with the most mature hammock having ecotones with mangrove swamp and strand intact is North Sebastian Inlet (BREV-17). Jetty Park (BREV-4) has an intact transition from temperate/tropical to xeric hammock which was not found elsewhere, although it probably existed on Cape Canaveral before the Air Force installation were built. The other six sites are all more or less equivalent in terms of the quality of their natural communities.

Beach dune and strand are fairly well represented in public ownership. Tropical hammock has no large sites in either public or private ownership. Since this was the principal climax community on the barriers of southern Martin, Palm Beach, Broward and Dade Counties, it would seem desirable to preserve any good existing examples that remain within these counties. The best quality example, though small, is Jupiter Estates South (MART-8). Management of these sites is needed - invasive exotics and exposure of canopy to salt spray have damaged tropical hammock at Hillsboro Estates (BROW-1) and Jupiter Estates North (MART-7). Tropical hammock on shell substrates north of these counties is well represented on public lands relative to the natural extent of its occurrence. Scrub also has a limited occurrence on barrier islands in southern Brevard and northern Palm Beach Counties. It has substantial acreages at two publicly owned sites (Coconut Point North (BREV-7) and Radnor Beach Park (PALM-4). It would be desirable for perpetuation of the associated scrub jays, which have a minimum territory size, increase its acreage in sites adjacent to these or with large acreages of scrub, such as (BREV-8).

Table 4.

## SITES PRIMARILY IN PUBLIC OWNERSHIP

<u>Sites (% public)</u>	<u>(A) Communities Represented</u>	<u>Approx. Acreage</u>
<b><u>Excellent Sites</u></b>		
BREV-1 Canaveral National Seashore (100%)	coastal strand	198
BREV-2 False Cape (100%)	beach dune coastal strand xeric hammock	190 380 570
BREV-3 Cape Canaveral (100%)	beach dune coastal strand coastal grassland	285 758 189
BREV-7 Coconut Point North (75%)	scrub tropical hammock	45 10
BREV-18 Sebastian Inlet State Recreation Area (75%)	beach dune coastal strand temp./trop. hammock tropical hammock	7 33 30 4
STLU-9 Dollman Tract (100%)	coastal strand temp./trop. hammock tropical hammock	50 18 15
PALM-6 MacArthur Beach State Park (100%)	beach dune coastal strand tropical hammock	16 20 48
PALM-12 Gumbo Limbo Nature Center (100%)	tropical hammock	40
BROW-2 Bartlett Estate (100%)	tropical hammock	11
<b><u>Good Sites</u></b>		
BREV-5 Lori Wilson Park (100%)	temp./trop. hammock tropical hammock	3 4
BREV-6 Spessard Holland Park (100%)	scrub	8
STLU-3 Fort Pierce Inlet State Recreation Area (100%)	beach dune temp./trop. hammock	6 26
MART-2 Stuart Beach Park (100%)	temp./trop. hammock	16
MART-5 St. Lucie Inlet State Recreation Area (100%)	beach dune temp./trop. hammock tropical hammock	66 51 17
MART-9 Blowing Rocks Preserve (100% non-profit)	beach dune coastal strand	13 20
PALM-4 Radnor Beach Park (100%)	beach dune coastal strand	7 30
PALM-9 Boynton Beach Park (100%)	beach dune coastal strand tropical hammock	1 3 7
BROW-2 Hugh Taylor Birch State Recreation Area (100%)	tropical hammock	58
BROW-4 John U. Lloyd State Recreation Area (100%)	beach dune	44
BROW-5 North Beach Park (100%)	coastal strand	20

Table 5.

## SITES PRIMARILY IN PRIVATE OWNERSHIP

<u>Sites (% private)</u>	<u>(A) Communities Represented</u>	<u>Approx. Acreage</u>
<b><u>Excellent Sites</u></b>		
BREV-4 Jetty Park (90%)	coastal strand temp./trop. hammock xeric hammock	20 50 50
BREV-13 North Florida Beach (90%)	coastal strand temp./trop. hammock	10 198
BREV-17 North Sebastian Inlet (100%)	beach dune coastal strand temp./trop. hammock	16 70 189
INDI-2 North Jungle Trail (70%)	coastal strand temp./trop. hammock tropical hammock	92 92 22
INDI-3 Golden Sands Park (94%)	coastal strand temp./trop. hammock	51 67
INDI-4 South Wabasso Beach Park (100%)	coastal strand temp./trop. hammock	26 48
INDI-5 North Baytree Development (100%)	coastal strand temp./trop. hammock	29 97
INDI-6 South Jungle Trail (100%)	beach dune coastal strand temp./trop. hammock	7 70 99
MART-8 Jupiter Estates South (100%)	coastal strand tropical hammock	6 7
PALM-5 Loggerhead Park (80%)	coastal strand scrub	12 39
<b><u>Good Sites</u></b>		
BREV-8 Coconut Point (88%)	scrub	111
BREV-15 Aquarina (100%)	temp./trop. hammock	143
INDI-7 Prang Island (100%)	tropical hammock	23
INDI-8 South of Round Island County Park (93%)	temp./trop. hammock	47
STLU-1 Avalon (60%)	beach dune coastal strand temp./trop. hammock	11 70 191
STLU-2 Fish House Cove (100%)	tropical hammock	11
STLU-6 Florida Power & Light Nuclear Plant (100% - no public access)	tropical hammock	10
STLU-8 Herman's Bay to Normandy Beach Access (99%)	beach dune coastal strand temp./trop. hammock tropical hammock	12 44 85 10
MART-2 Stuart Beach Park (50%)	temp./trop. hammock	30
MART-7 Jupiter Estates North (100%)	tropical hammock	47
BROW-3 Posner Tract (100%)	beach dune	11

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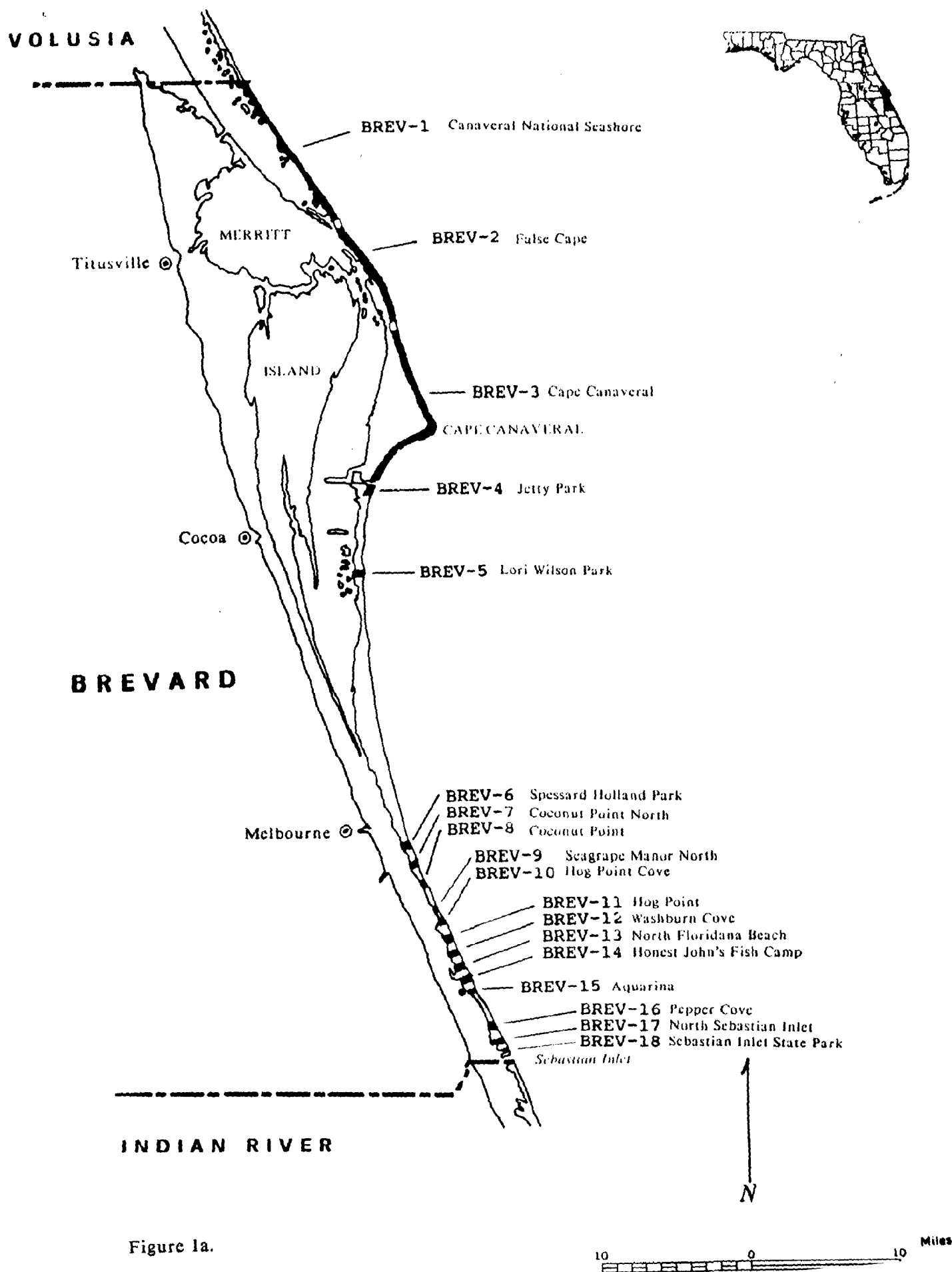


Figure 1a.

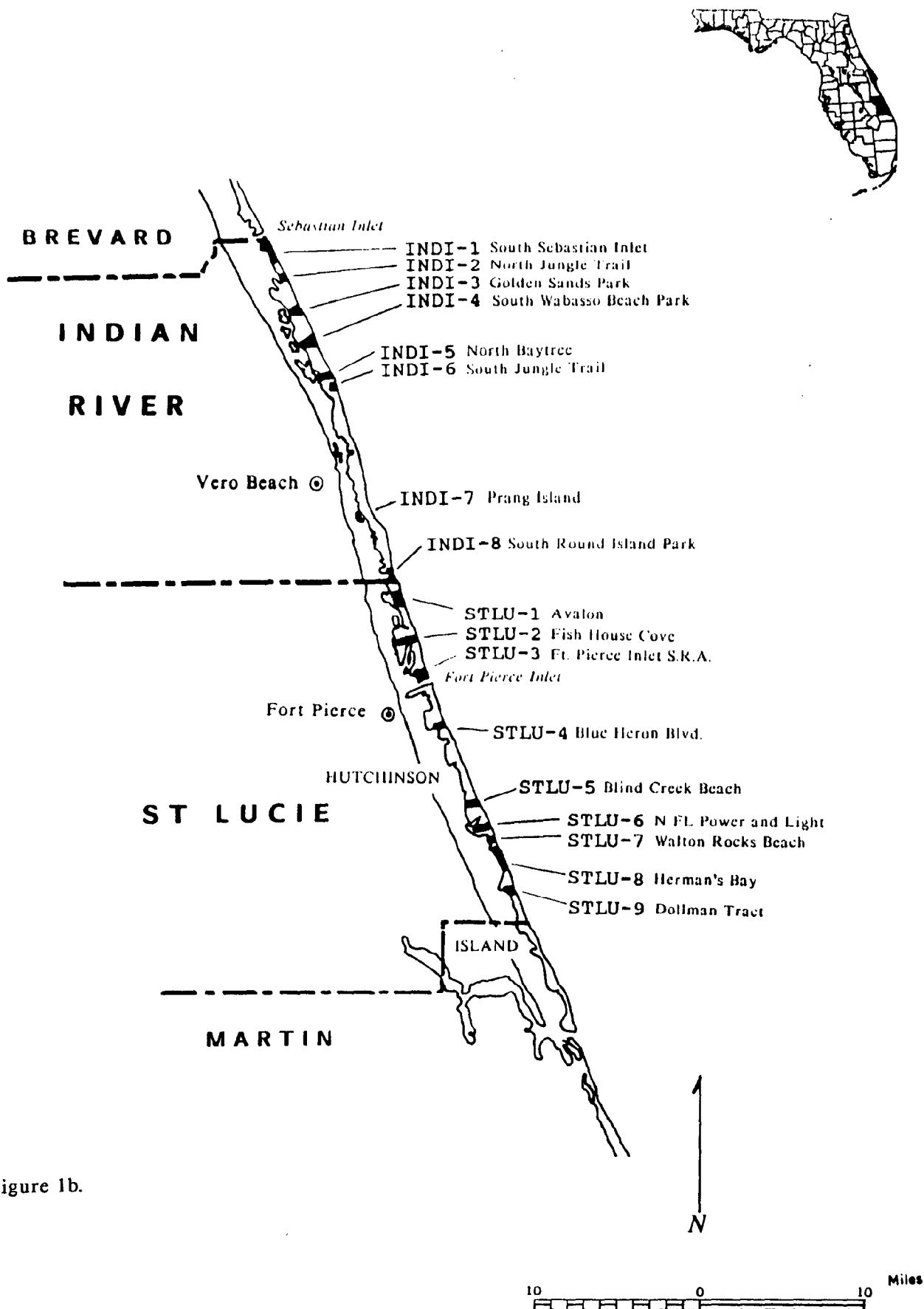


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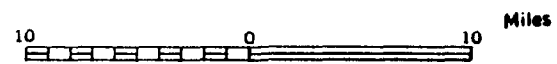
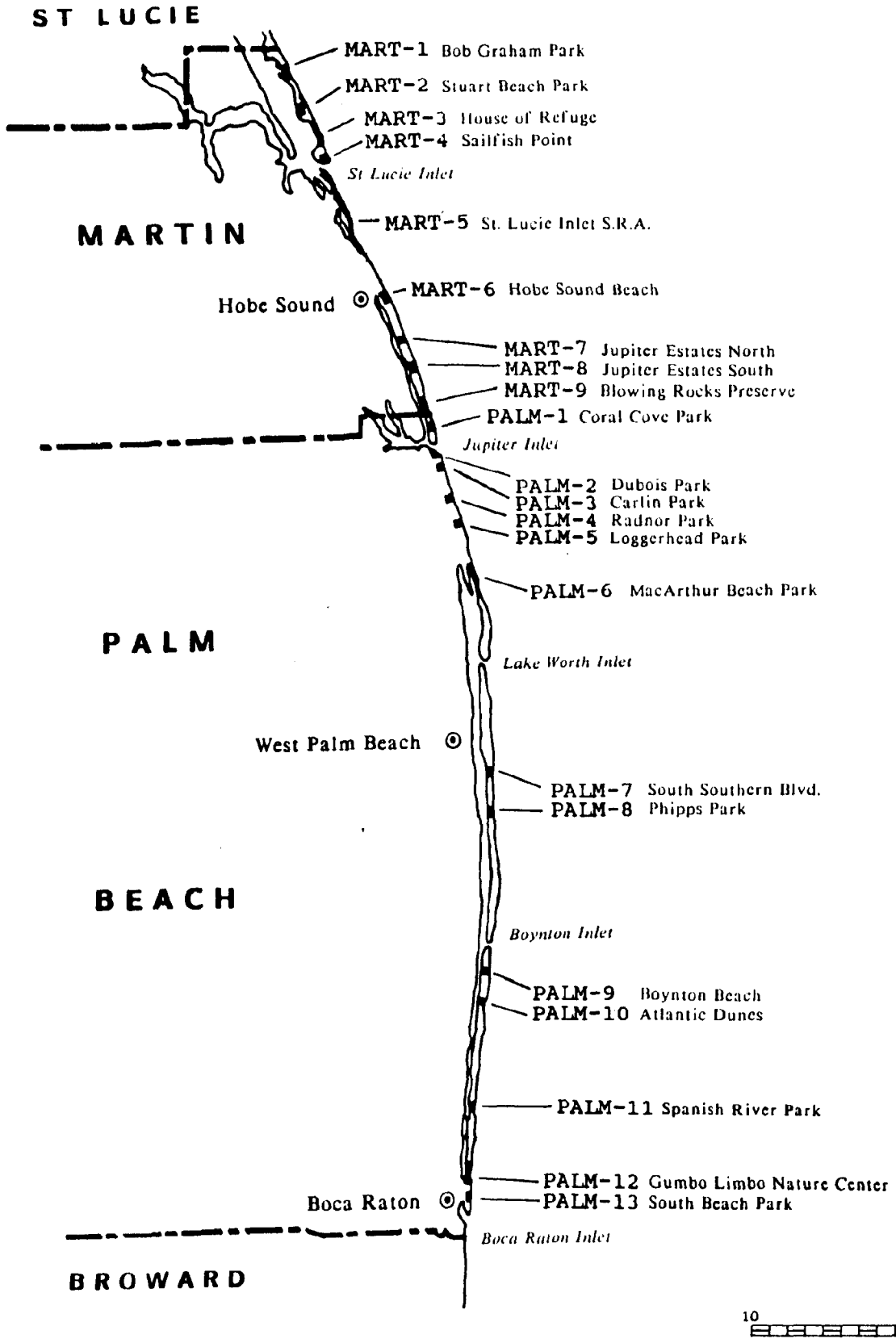
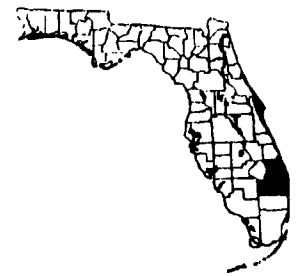


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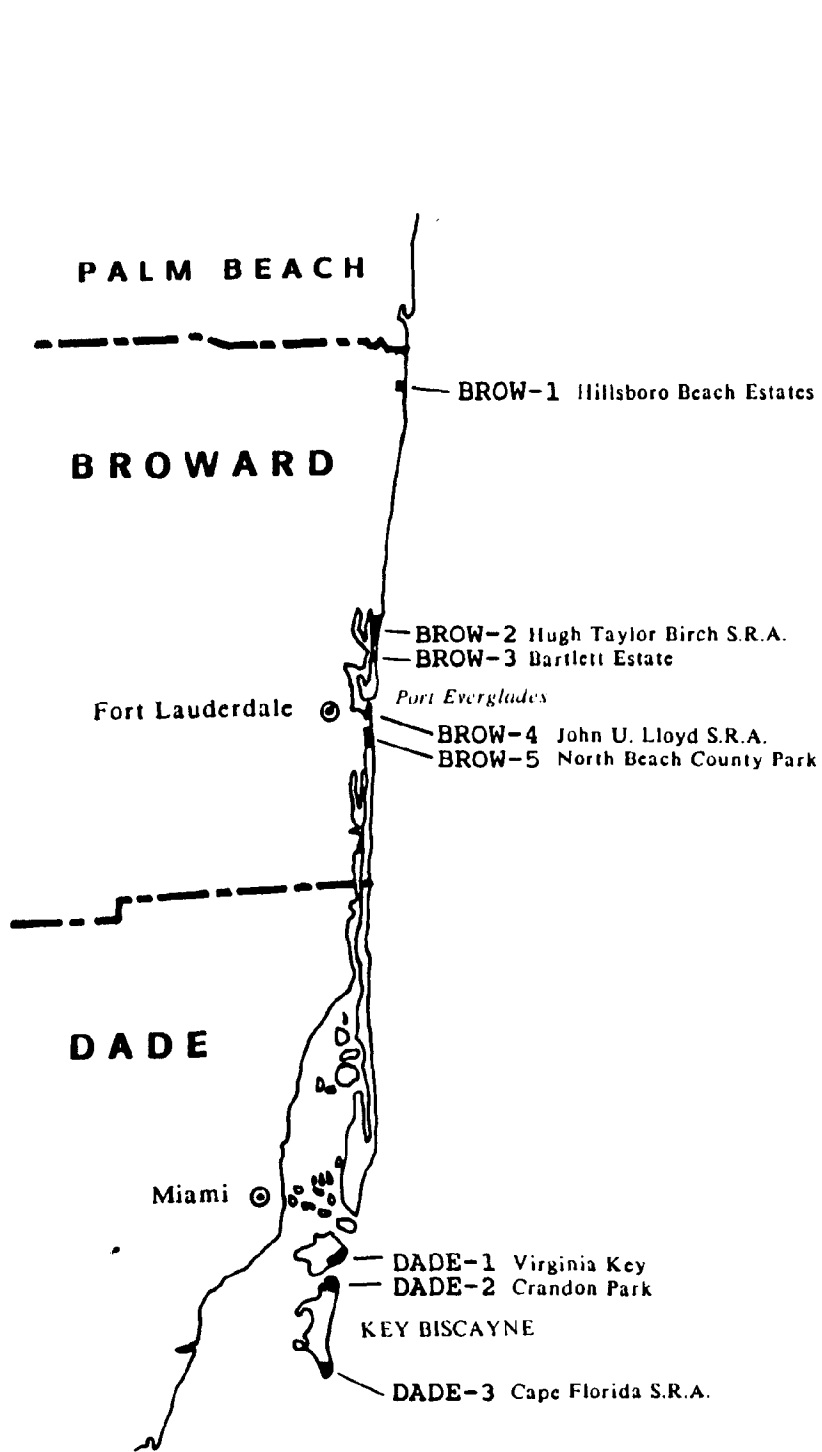
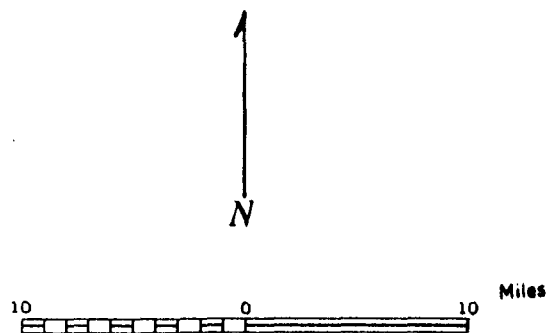


Figure 1d.



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Table 1.

Beach Dune = SE coast Florida

STRANDS

A = abundant  
 LA = locally abundant  
 F = frequent  
 O = occasional  
 R = rare  
 X = killed back by freeze

SPECIES (25 sites total)	c y																								
20 Iva imbricata	F	A	A	A	A	F	F	-	0	R	A	-	A	0	A	A	A	0	0	1	1	0	0	0	0
20 Uniola paniculata	A	A	A	LA	A	A	A	A	A	A	A	-	A	0	A	A	A	A	A	A	A	A	A	A	A
13 Helianthus debilis	-	-	-	R	-	-	A	0	-	0	-	-	A	R	R	-	-	-	-	-	-	-	-	-	-
13 Ipomoea pes-caprae	-	0	0	-	-	-	0	0	-	0	0	-	A	0	0	0	0	0	0	0	0	0	0	0	0
12 Panicum amarulum	LA	LA	LA	A	-	-	0	-	-	-	-	-	A	LA	0	-	-	-	-	-	-	-	-	-	-
11 Croton punctatus	-	0	-	-	-	-	0	R	-	-	-	-	A	LA	0	0	0	0	0	0	0	0	0	0	0
11 Remirea maritima	-	0X	LA	-	-	-	-	-	-	-	-	-	A	A	LA	0	0	0	0	0	0	-	LA	A	A
11 Sesuvium portulacastrum	-	-	-	-	-	-	0	R	-	-	0	-	A	-	A	0	0	0	0	0	0	-	A	-	A
10 Alternanthera maritima	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LA	LA	0	0	LA	A	-	A	-	A
10 Coccoloba uvifera	0X	-	-	-	-	0X	-	-	-	LA	0X	-	-	0X	0X	-	LA	0	0	A	-	0	-	-	A
10 Spartina patens	LA	LA	LA	-	-	-	LA	-	-	LA	-	-	LA	-	0	0	LA	-	-	0	LA	A	-	-	A
10 Scaevola plumieri	-	-	-	-	-	0X	-	-	-	-	-	-	-	0X	RX	RX	0	-	0	0	-	-	-	-	0
9 Canavalia maritima	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	-	-	-	-	-
7 Paspalum distichum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6 Distichlis spicata	LA	LA	-	-	-	-	LA	LA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6 Yucca aloifolia	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Chamaesyce nesombranthifolium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Oenothera humifusa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Opuntia stricta	R	-	0	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Physalis viscosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 Suriana maritima	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Cakile lanceolata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Chamaesyce bonariensis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Dalbergia ecastophyllum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Heterotheca subaillaris	A	A	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Ipomoea stolonifera	-	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Salsole kali	-	0	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4 Scaevola sericea (exotic)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Chrysobalanus icaco	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Okenia hypogaea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 Serenoa repens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Casuarina equisetifolia (exotic)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Colubrina asiatica (exotic)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Ernodea littoralis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Fimbristylis spathacea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Glandularia maritima	R	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Hydnocallis latifolia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Randia aculeata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Sabal palmetto	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2 Tournefortia gnaphalodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Ambrosia hispida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1 Lantana depressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total # of Species	5	17	16	10	4	9	8	10	5	10	13	5	11	7	32	12	16	10	9	10	12	10	10	13	18

Beach elder	Beach sunflower	Railroad vine	Bitter panicum	Beach tea	Beach star	Sea purslane	Alternanthera	Sea grape	Beach cordgrass	Beach berry	Beach bean	Seashore paspalum	Saltgrass	Spanish bayonet	Woody spurge	Evening primrose	Prickly pear	Sand cherry	Sea cedar	Sea rocket	Spurge	Coin vine	Telegraph weed	Fiddleleaf morning-glory	Russian thistle	Exotic beach berry	Cocoplum	Burrowing four o'clock	Sea palmetto	Australian pine	Asian colubrina	Beach creeper	Fimbrary	Coastal vervain	Broad-leaved spider lily	White indigoberry	Cabbage palm	Sea lavender	Coastal rogneed	Florida lantana
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## Coastal Strand - SE Coast, Florida

R = abundant  
O = occasional F = frequentLR = locally abundant  
M = killed back by freeze (12/89)

Table 2.

Table 2.		STRANDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	B	r	e	u	n	c	1a	1b	2a	2b	2c	3a	3b	4a	4b	5	6	7	8	9a	9b	0a	0b	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
33 Serenoa repens	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

(35 total sites)

STANDS

I

S

H

P

B

D

r

a

o

d

m

e

h

g

f

c

Noteline Hammock = SE coast, Florida  
 R = abundant R = rare LA = locally abundant  
 0 = occasional F = frequent \* = killed back by freeze (12/89)  
 STRANDS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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## Coastal Uplands Site Summary

### BREV-1

### Canaveral National Seashore, Brevard County.

Topographic map: Wilson, Pardon Island

Survey date: 14 February 1990 (F90JOH03)

Approximate acreage: 900

**Physical setting:** narrow barrier island less than 1000 ft wide in most places with most of the width contributed by marshes and mangrove swamps on the lagoon side. Historically the shoreline shows little net change since 1874 (Demirpolat et al., 1988). Upland communities consist of two parallel strips of dune and strand vegetation with occasional islands of maritime forest on the edges of the broader marshes and swamps.

**Plant communities:** beach dune, coastal strand, maritime hammock.

**beach dune:** (B) erosion has eliminated most beach dune area; where present dominated by sea oats (*Uniola paniculata*) and beach elder (*Iva imbricata*).

**coastal strand:** (A+) low hedge-like stand dominated by saw palmetto near the coast with a diversity of tropical and temperate shrubs farther inland. Of the tropical shrubs myrsine (*Rapanea punctata*) and sea grape (*Coccoloba uvifera*) were killed back by the freeze of December 1989, whereas nakedwood (*Myrcianthes fragrans*) and Florida privet (*Forestiera segregata*) were unaffected. The temperate live oak (*Quercus virginiana*), wax myrtle (*Myrica cerifera*), and buckthorn (*Bumelia tenax*) were unaffected by the freeze and were putting out new leaves at the time of the visit.

**maritime hammock:** (A) temperate canopy dominated by live oak near coast (*Quercus virginiana*) and redbay (*Persea borbonia*) and cabbage palm (*Sabal palmetto*) nearer the lagoon. Understory a mixture of temperate and tropical shrubs principally saw palmetto (*Serenoa repens*), hercules' club (*Zanthoxylum clava-herculis*), marlberry (*Ardisia escallonioides*), and nakedwood (*Myrcianthes fragrans*).

**Rare species:** coastal vervain (*Glandularia maritima*); broad-leaved spiderlily (*Hymenocallis latifolia*); sea lavender (*Tournefortia gnaphalodes*) - collected by Shuey in 1973 (UCF herbarium); southeastern beach mouse (*Peromyscus polionotus niveiventris*; Humphrey et al., 1987); loggerhead turtle (*Caretta caretta*) - 44 nests/km (Hopkins and Richardson, 1984; pers. comm, John Stiner, park biologist, 1990).

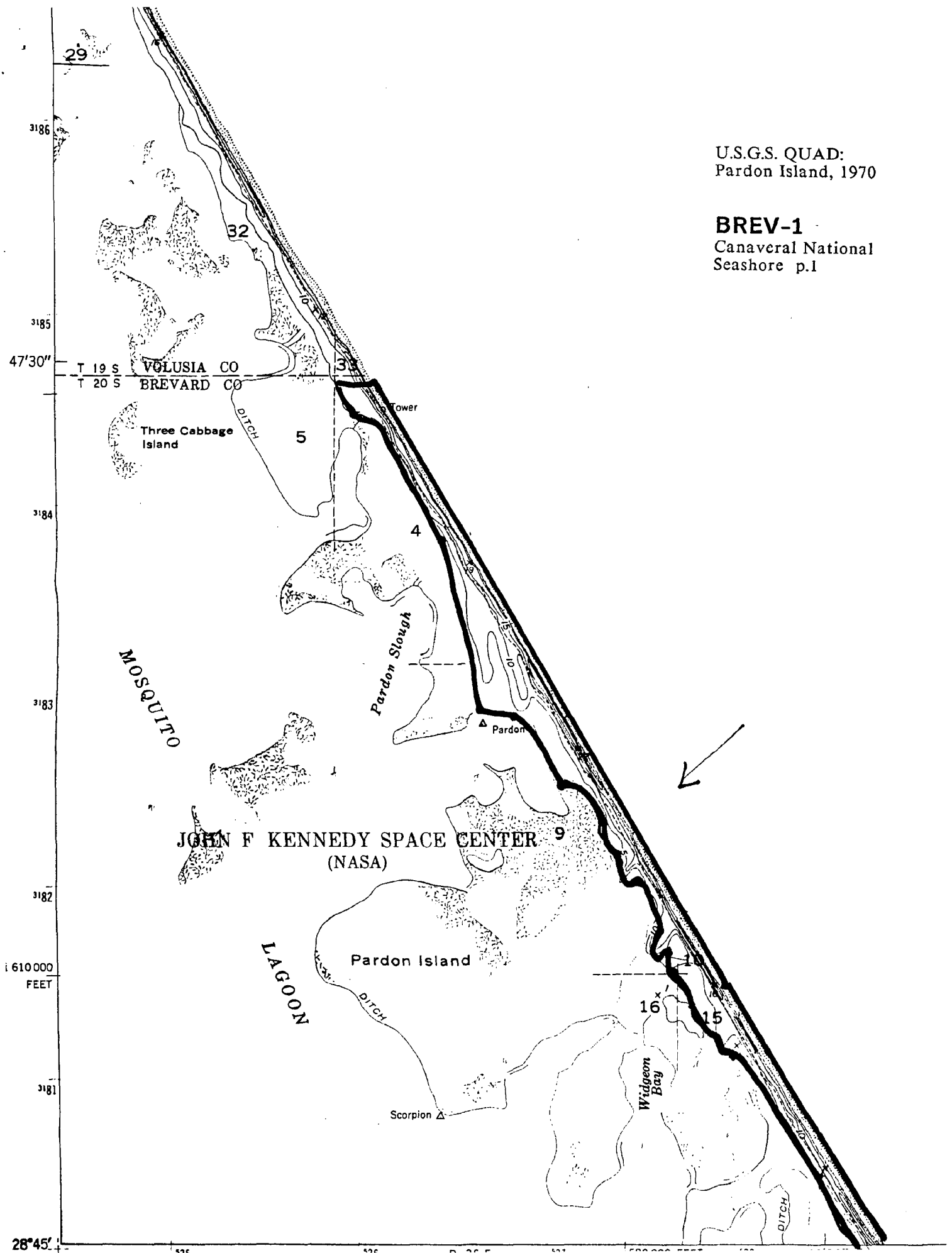
**Disturbance:** all salt marsh and mangrove borders were ditched and diked for mosquito control in the 1960's. This disturbance allowed the invasion of the exotic shrub, Brazilian pepper (*Schinus terebinthifolius*). The black mangroves (*Avicennia nitida*) were killed back by the freeze of December 1989, as was the Brazilian pepper.

**Surrounding land use:** Kennedy Space Center (NASA launch pads) and Merritt Island National Wildlife Refuge to south.

**Ownership:** public: federal (National Park Service).

U.S.G.S. QUAD:  
Pardon Island, 1970

**BREV-1**  
Canaveral National  
Seashore p.1



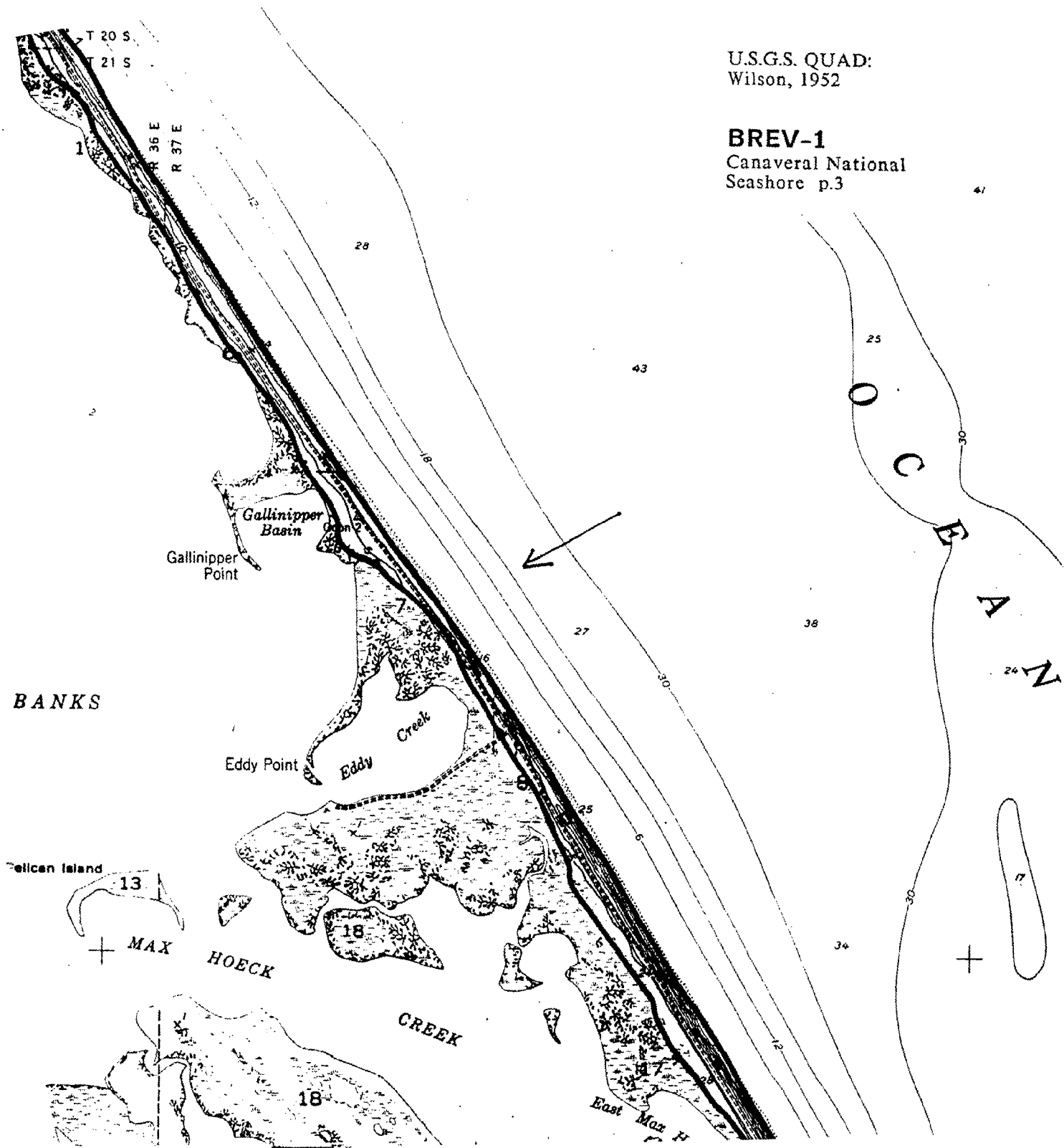
U.S.G.S. QUAD  
Wilson, 1952

**BREV-1**  
Canaveral Nation  
Seashore p.2



U.S.G.S. QUAD:  
Wilson, 1952

**BREV-1**  
Canaveral National  
Seashore p.3



U.S.G.S. QUAD:  
Wilson, 1952

**BREV-1**  
Canaveral National  
Seashore p.4



## Coastal Uplands Site Summary

### BREV-2

#### False Cape, Canaveral Air Force Station, Brevard County.

Approximate acreage: 3800

Topographic maps: False Cape

FI DOT aerial photo: PD3813-13-51 (1/6/89) - complete coverage unavailable

Survey date: 13 February 1990 (F90JOH01)

**Physical setting:** prograding coast with broad grassy foredune zone; subdued ridge and swale topography roughly parallel to the shoreline. Historically the coast has been prograding since 1874, except for some recession between 1961 and 1977 (Demirpolat et al., 1988). Net increase since 1847 has been slightly over 0.1 mile. Sand shelly with pinkish tinge.

**Plant communities:** beach dune, coastal strand, maritime hammock, xeric hammock, scrub

**beach dune:** (A) low (2-ft) foredune with flat grassy plain behind it; dead mounded shrubs of sea grape (killed by December 1989 freeze) scattered among the grasses, beach cordgrass (*Spartina patens*), bitter panicum (*Panicum amarum* var. *amarulum*), and sea oats (*Uniola paniculata*). Beach star (*Remirea maritima*) abundant in this zone.

**coastal strand:** (A) dominated by saw palmetto (*Serenoa repens*) nearest the coast; mixture of temperate and tropical shrubs farther inland, including live oak (*Quercus virginiana*), buckthorn (*Bumelia tenax*), Hercules' club (*Zanthoxylum clava-herculis*), and wax myrtle (*Myrica cerifera*). Most abundant tropical species were unaffected by the December 1989 freeze - nakedwood (*Myrcianthes fragrans*) and Florida privet (*Forestiera segregata*). Those that were affected, myrsine (*Rapanea punctata*) and sea grape (*Coccoloba uvifera*), were less common. Disturbed portions were colonized by camphorweed (*Heterotheca subaxillaris*), gopher apple (*Licania michauxii*), catbriar (*Smilax auriculata*), and buckthorn (*Bumelia tenax*) between the clumps of shrubs left from the original vegetation. All species re-sprouted following fire.

**maritime hammock:** (A) composed of temperate canopy trees, redbay (*Persea borbonia*), live oak, with saw palmetto and wild coffee (*Psychotria nervosa*) in understory.

**xeric hammock:** (B) low (15 to 20-ft) forest with canopy of live oak and a temperate understory of myrtle oak (*Quercus myrtifolia*), wax myrtle (*Myrica cerifera*), and staggerbush (*Lyonia fruticosa*). Covers the bulk of the broader portion of the cape - stand broken up into patches by missile launch sites.

**Rare species:** beach star (*Remirea maritima*) - common on prograding beach; loggerhead turtle (*Caretta caretta*) - 130 nests/km (Mercadante, pers. comm., 1990); least tern (*Sterna antillarum*) - nesting colony (O'Meara, T. E., 1988); plus the following species reported by Mercadante (pers. comm., 1990): gopher tortoise (*Gopherus polyphemus*), scrub jay (*Aphelocoma coerulescens*), and southeastern beach mouse (*Peromyscus polionotus niveiventris*).

**Disturbance:** seven launch complexes interrupt the native vegetation -- most have burned strips from missile launchings associated with them. Large portions of the strand zone east of Coast Road have been burned and are recovering.

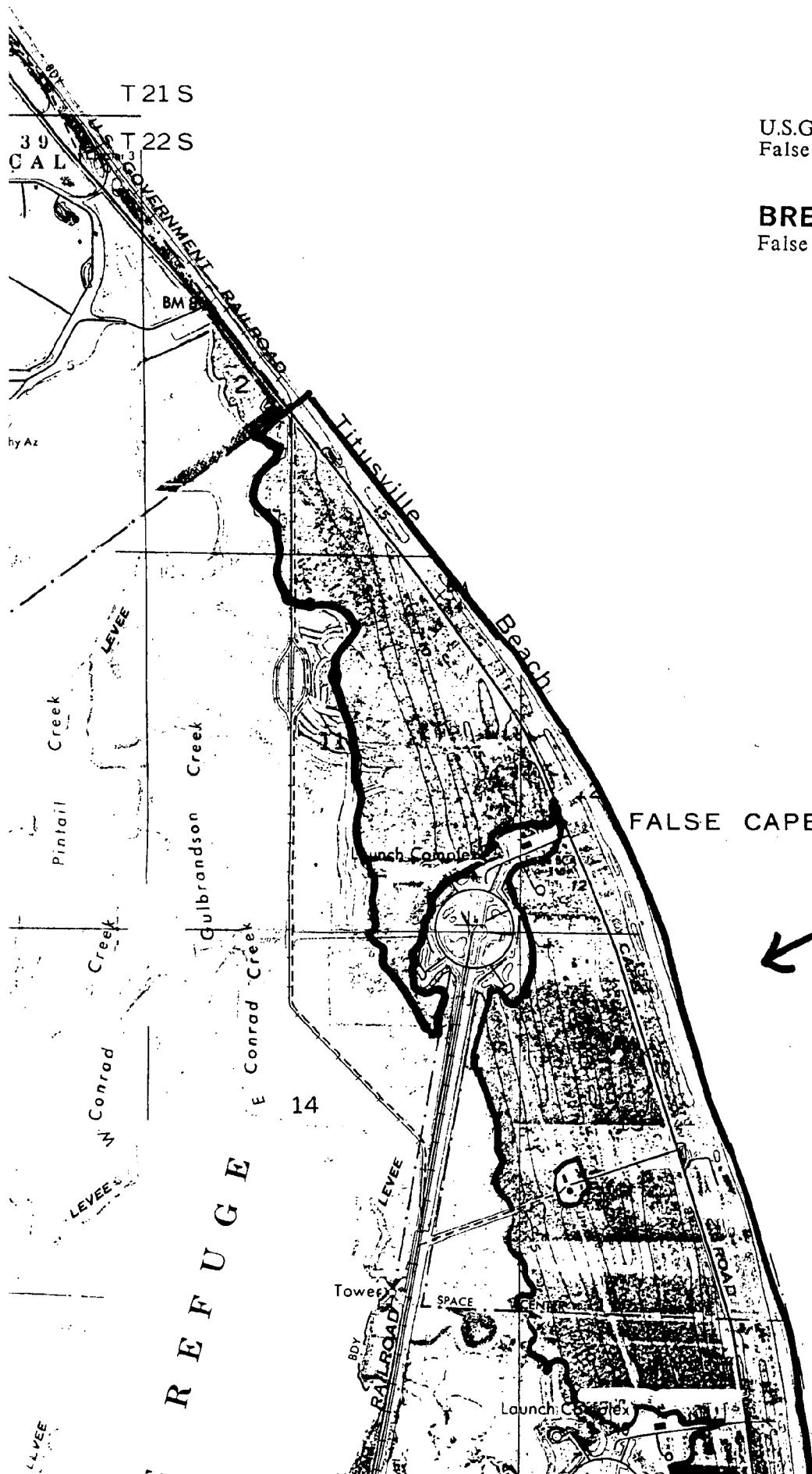
**Comments:** Virginia live oak (*Quercus virginiana*), which dominates the Cape, forms many small root sprouts after fire, unlike sand live oak (*Quercus geminata*) which dominates

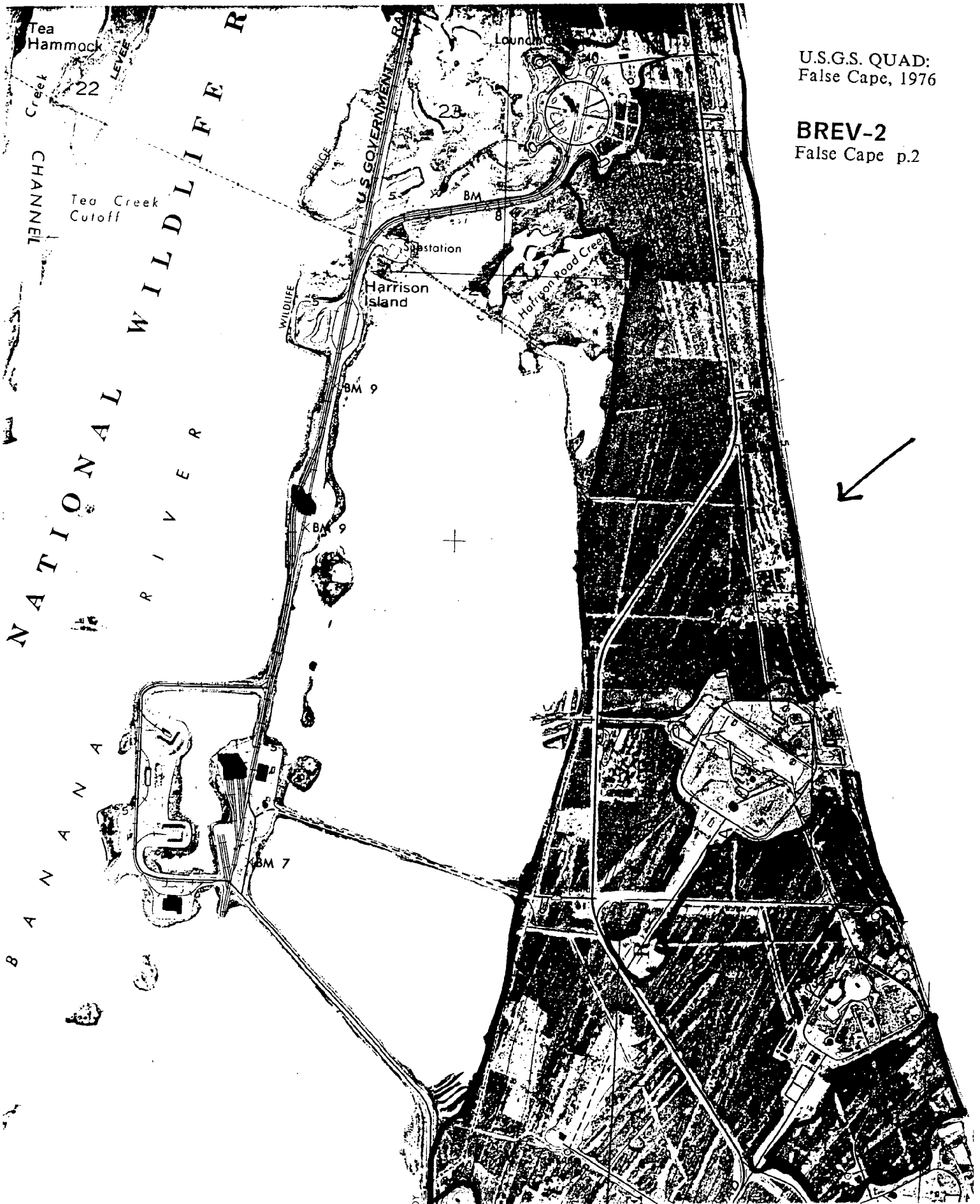
## Coastal Uplands Site Summary

Merritt Island, and forms only a few tall sprouts near the base of parent shoot after fire. Live oak sprouts were only 6-8 inches tall one year after fire, whereas one could expect sand live oak sprouts to be 2-3 feet tall by then. This may indicate that live oak is not as well adapted to a frequent fire regime as sand live oak.

**Ownership: public: federal (U.S. Air Force - Canaveral Air Station).**

**BREV-2**  
False Cape p.1





U.S.G.S. QUAD:  
False Cape, 1976

**BREV-2**  
False Cape p.2



U.S.G.S. QUAD:  
False Cape, 1976

**BREV-2**  
False Cape p.3



## Coastal Uplands Site Summary

### BREV-3

#### Cape Canaveral, Canaveral Air Force Station, Brevard County, Florida.

Approximate acreage: 9480

Topographic map: Cape Canaveral

FL DOT aerial photo: not available for this area

Survey date: 13 February 1990 (F90JOH02)

**Physical setting:** broad, low cape composed of dune ridges and swales running at an angle to the coast. Shore is eroding (scarp cut into dune line) at the north and south ends and prograding at the tip. Evidence of rapid progradation is provided by several lines of sea oats dunes and the shallow sand bars about 200 yards off shore at the tip, and by historical shoreline mapping (Demirpolat et al, 1988). Quartz sand with almost 50% mixture of shell and many fragments of coquina rock on the beach.

**Plant communities:** beach dune, coastal grassland, coastal strand, xeric hammock.

**beach dune:** (A+) broad (ca 1000 ft) pioneering zone of low dune ridges covered by sea oats (*Uniola paniculata*) with widely scattered clumps of saw palmetto (*Serenoa repens*). Runners of the beach star (*Remirea maritima*) cover the area between the ridges. Beach elder (*Iva imbricata*) and salt grass (*Distichlis spicata*) are abundant on the outer beach.

**coastal grassland:** (A) on prograding portion south of tip; dominated by bluestem (*Andropogon* sp), muhly grass (*Muhlenbergia capillaris*), telegraph weed (*Heteothea subaxillaris*) and scattered shrubs which coalesce farther inland to form coastal strand community.

**coastal strand:** (A) shrub stand with equal parts saw palmetto (*Serenoa repens*), buckthorn (*Bumelia tenax*), wax myrtle (*Myrica cerifera*), and sea grape (*Coccoloba uvifera*). Shrubby form of live oak (*Quercus virginiana*) rare south of tip, but common to north.

**xeric hammock:** (B) low canopy of sand live oak (*Quercus geminata*) with temperate understory of saw palmetto, wax myrtle (*Myrica cerifera*), and lyonia (*Lyonia fruticosa*).

**Rare species:** beach star (*Remirea maritima*) - covers acres at the tip; loggerhead turtle (*Caretta caretta*) - 45 nests/km (Hopkins and Richardson, 1984) ; least terns (*Sterna antillarum*) - nesting colony (O'Meara, 1988).

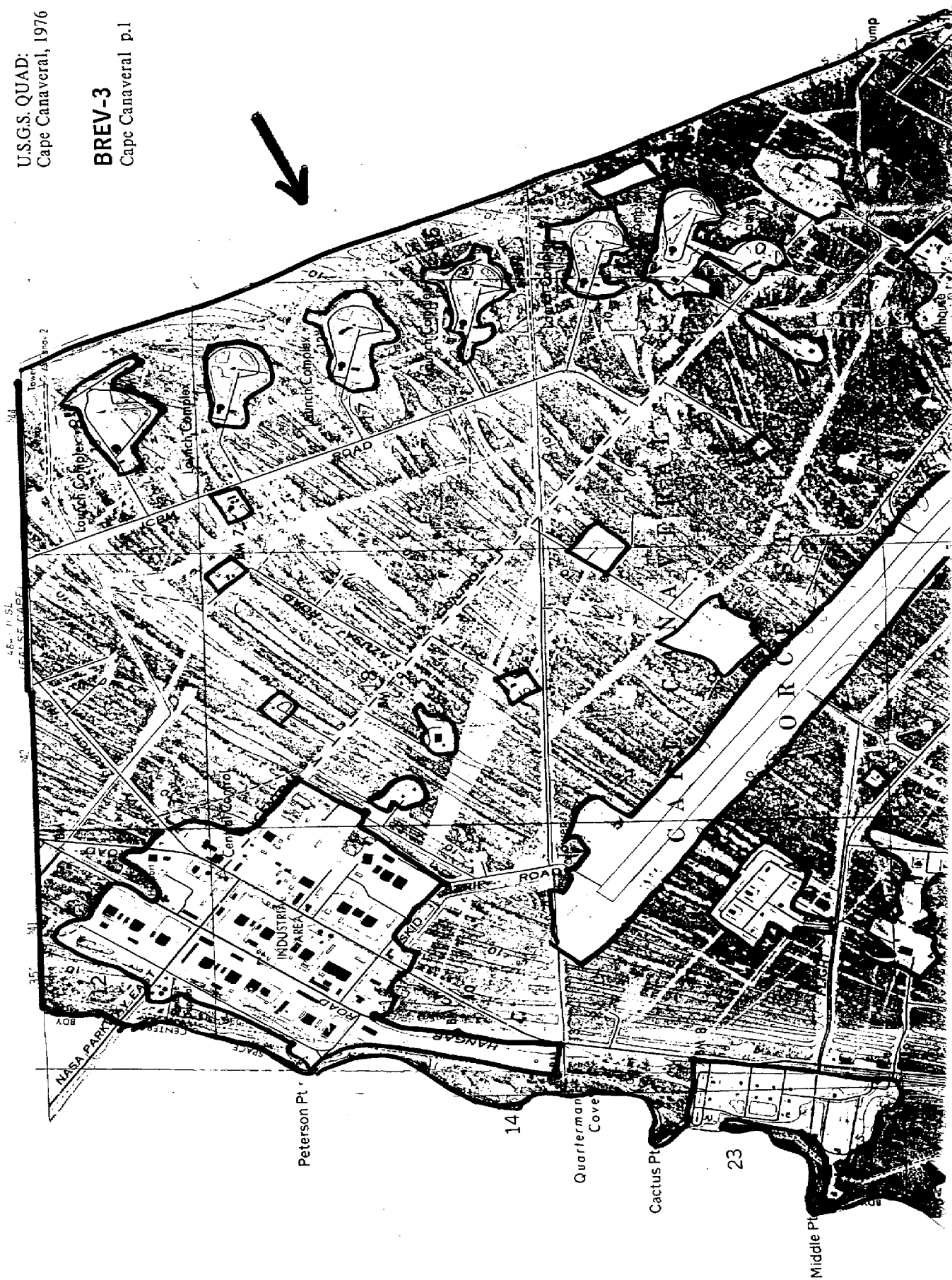
**Disturbance:** buildings, and missile and rocket launch pads connected with Air Force operations, fires produced by missile launches.

**Surrounding land use:** Kennedy Space Center to north and west.

**Ownership: public:** federal (U.S. Air Force - Canaveral Air Station).

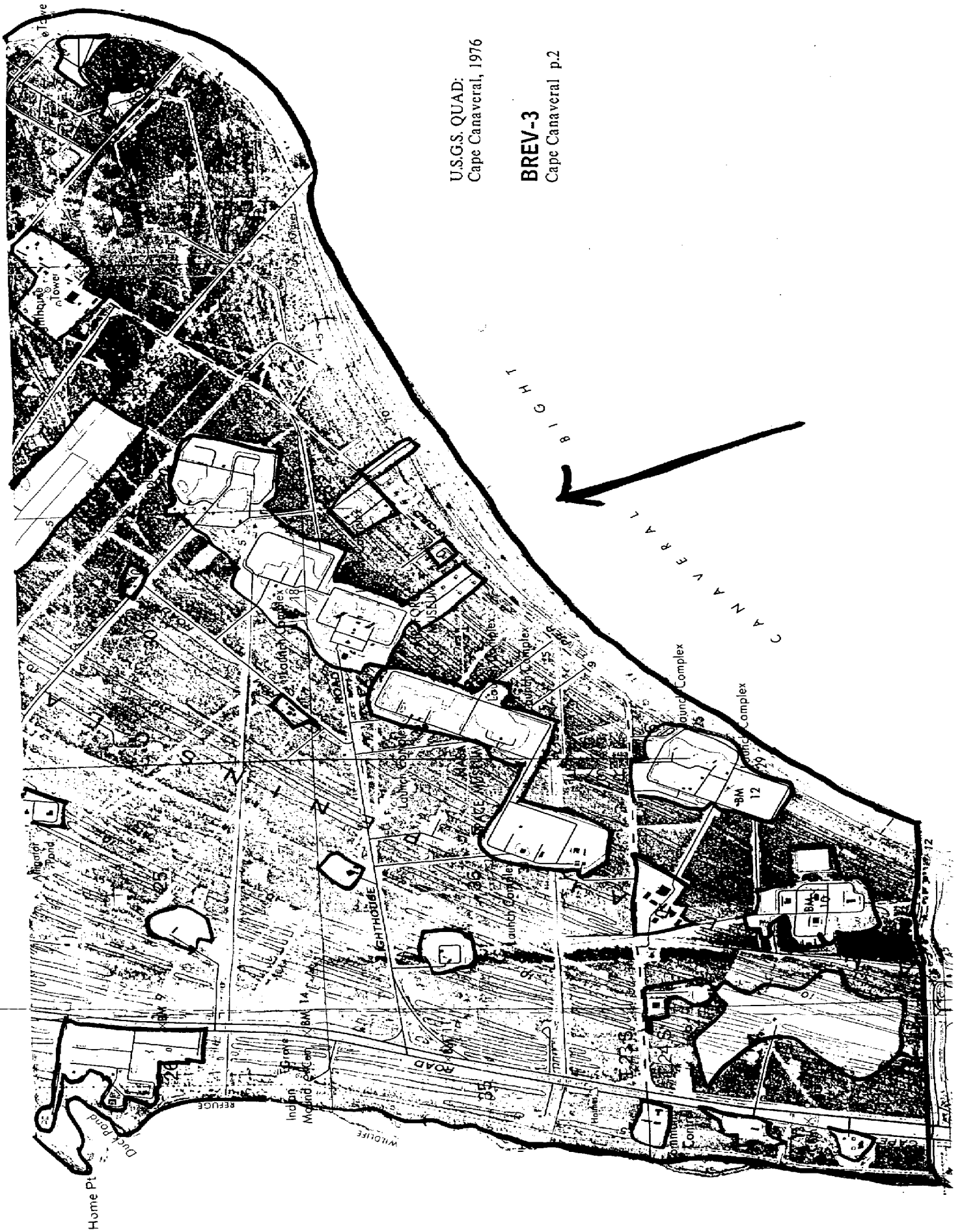
**Comments:** Kurz (1942) visited the area south of the tip before it was disrupted by launch sites and noted that the composition of the shrubby vegetation changed about 1.5 miles inland from stands dominated by live oak (*Quercus virginiana*) nearer the coast to stands dominated by sand live oak (*Quercus geminata*) farther inland. This change was correlated with a decrease in the amount of shell in the soil and a corresponding decrease in pH.

**BREV-3**  
Cape Canaveral p.1



U.S.G.S. QUAD:  
Cape Canaveral, 1976

**BREV-3**  
Cape Canaveral p.2



## Coastal Uplands Site Summary

### BREV-4

#### Jetty Park South, Brevard County, Florida.

Approximate acreage: 140

Topographic map: Cape Canaveral

Florida D.O.T. aerial photo: PD3813-13-40 (1/5/89)

Survey date: 15 February 1990 (F90JOH04)

**Physical setting:** continuation of the low ridge/swale system parallel to the shoreline seen to north on Cape Canaveral and interrupted by the artificial inlet (Canaveral Barge Canal). Coast is offset about 1000 feet westward from the line of coast to the north of the inlet jetty on Cape Canaveral Air Force Station, erosion caused by jetty trapping sand being moved southward by longshore drift. The beach itself had been renourished in 1985 (beach profile, Division of Beaches and Shores, Florida Department of Natural Resources) and does not show a scarp from recent wave action. Australian pine (*Casuarina equisetifolia*) stumps in the surf, however, attest to recent severe erosion.

**Plant communities:** beach dune, coastal strand, maritime hammock, xeric hammock. Communities show a continuous gradation for a mile inland from the beach from low saw palmetto strand behind the foredune, to 10 to 15-foot-tall dense shrub strand, to hammock with the same species composition as the strand but differentiated canopy/understory structure (25 - 35 ft tall), to xeric hammock near Atlantic Avenue with the same canopy trees as the hammock but myrtle oak (*Quercus myrtifolia*) and saw palmetto replacing the tropical species, i.e. myrsine (*Rapanea punctata*) and nakedwood (*Myrcianthes fragrans*), in the understory. Xeric hammock may be a stage in the development to scrub as leaching of calcium carbonate continues over time.

**beach dune:** (B) Scattered pioneer beach species. Trampling from heavy visitor use of park to north and compaction from cars driving parallel to the coast between the strand and beach prevent the formation of a continuous sea oats ridge.

**coastal strand:** (A+) well-developed stand of saw palmetto grading to dense shrubs and dwarfed trees of the maritime hammock behind it. Openings provided by paths add to the plant species diversity and are colonized by gopher tortoises.

**maritime hammock:** (A) Overstory of temperate trees, primarily Virginia live oak (*Quercus virginiana*) and redbay (*Persea borbonia*) with an understory of temperate and tropical species such as saw palmetto (*Serenoa repens*), myrsine (*Rapanea punctata*), and nakedwood (*Myrcianthes fragrans*).

**xeric hammock:** (A) East and west of Atlantic Avenue the hammock has the same canopy trees as the maritime hammock, but most of the tropical shrubs characteristic of the maritime hammock understory drop out and are replaced by temperate myrtle oak (*Quercus myrtifolia*) and saw palmetto. It would be interesting to take some soil samples to see if the change in species composition were correlated with increasing acidity, as has been found on Cape Canaveral to the north (Kurz, 1942).

**Rare species:** coastal vervain (*Glandularia maritima*) - several plants along path through north side of area; gopher tortoise (*Gopherus polyphemus*) - numerous burrows seen along paths through the strand and hammock areas; Florida scrub jay (*Aphelocoma coerulescens*; Cox, 1981).

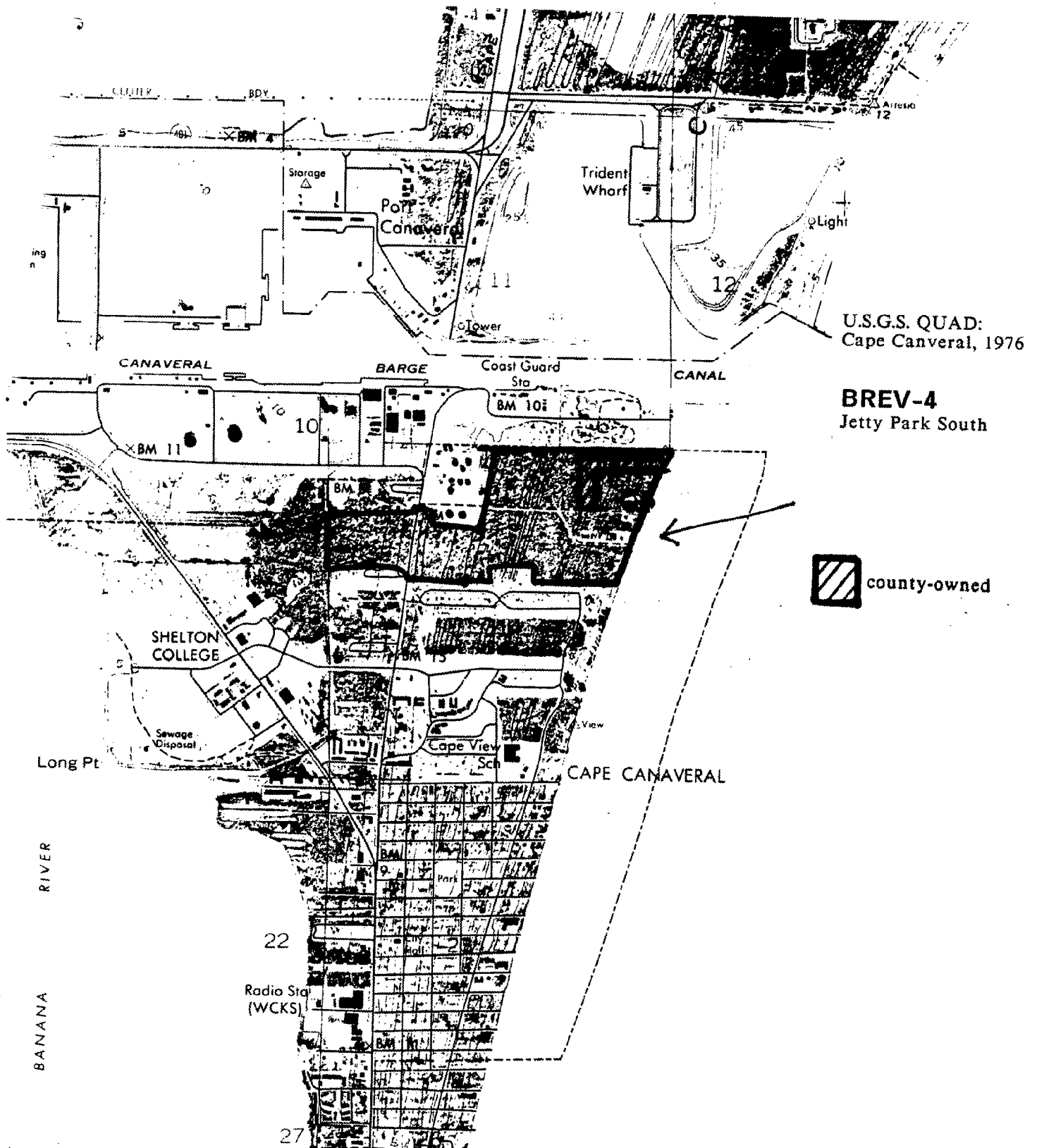
**Disturbance:** cars driven on the upper beach have compacted the shelly sand and prevented a continuous sea oats ridge from developing. A series of survey lines have been cut

## **Coastal Uplands Site Summary**

through the north side of the strand and maritime hammock parallel to the coast. Several paths lead from the beach into the strand, but these do not seriously disrupt the community.

**Surrounding land use:** county park (camping) to north; houses to south; storage tanks to west; Atlantic ocean to east.

**Ownership: public:** county (Brevard County owns a nine acre L-shaped parcel immediately south of the park with 300 ft of ocean frontage; Snodgrass, pers. comm., 1990). **private:** remaining acreage.



## Coastal Uplands Site Summary

### BREV-5

#### Lori Wilson Park, Brevard County, Florida.

Approximate acreage: 9

Topographic map: Cocoa Beach, Florida

Florida D.O.T. aerial photo: not obtained

Survey date: 15 February 1990 (F90JOH05).

**Physical setting:** narrow barrier island less than 0.5 mi wide. Park has a narrow (300' wide) strip of intact tropical hammock running at right angles to the coast. Hammock is traversed by a boardwalk and interpretive signs. Bulk of the park is taken up by parking lots and picnic area.

**Plant communities:** coastal strand, maritime hammock.

**coastal strand:** (B) The coastal strand is a narrow zone composed primarily of saw palmetto (*Serenoa repens*), sea grape (*Coccoloba uvifera*), and low cabbage palms (*Sabal palmetto*). Some shrubs of the exotic Brazilian pepper (*Schinus terebinthifolius*) are present. The sea grape and pepper were killed back by the freeze of December 1989 and are resprouting.

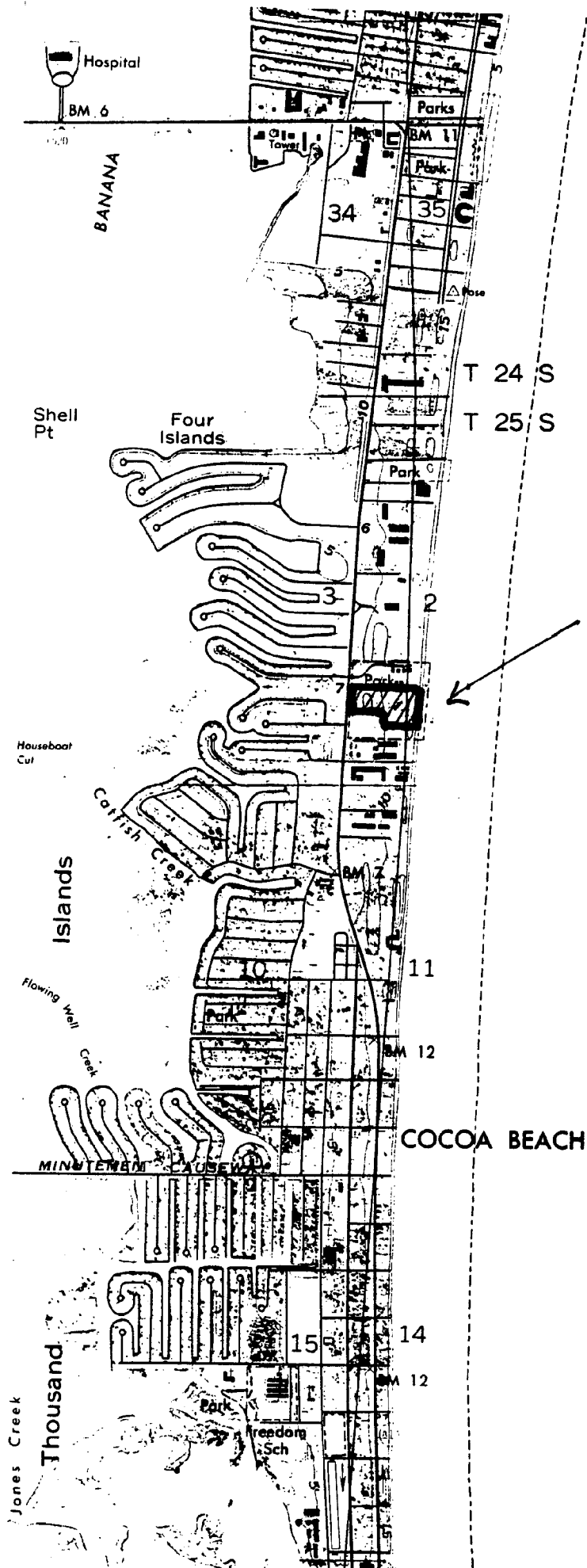
**maritime hammock:** (A+) Hammock is composed of temperate species nearest the coast - live oak (*Quercus virginiana*), redbay (*Persea borbonia*), saw palmetto, and tropical species towards A1A - strangler fig (*Ficus aurea*), pigeon plum (*Coccoloba diversifolia*), white stopper (*Eugenia axillaris*). Hammock contains a high diversity of tropical species (Plant list of Lori Wilson Park, 1982), all of which were killed back by the freeze of December 1989. Since tropical species are usually associated with calcareous substrates, perhaps there is a shell berm under the sand formed when the area was situated on the mangrove fringe along the Banana River, before the building of A1A and the finger canals to the west of it.

**Rare species:** coastal vervain (*Glandularia maritima*); loggerhead turtle (*Caretta caretta*) - 17 nests/km (Hopkins and Richardson, 1984).

**Disturbance:** moderate invasion of natural communities by Brazilian pepper (*Schinus terebinthifolius*).

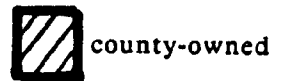
**Surrounding land use:** heavily urbanized area (Cocoa Beach); mangroves along Banana River replaced by finger canals.

**Ownership:** public: county



U.S.G.S. QUAD:  
Cocoa Beach, 1976

**BREV-5**  
Lori Wilson Park



## Coastal Uplands Site Summary

### BREV-6

#### Spessard Holland Park, Brevard County, Florida.

Approximate acreage: 10

Topographic map: Melbourne East, Florida

Florida D.O.T. aerial photo: PD3813-14-13 (1/5/89)

Survey date: 15 February 1990 (F90JOH06).

**Physical setting:** moderately broad barrier island with some ridge/swale topography. No sea oats dune on beach; 15-foot scarp eroded into saw palmettos. This area of Brevard County suffered heavy erosion (up to 20' horizontal setback of dune line) in the 1984 Thanksgiving Day Storm (Balsillie, 1985), the effects of which are still apparent in 1990. Several of the park walkovers to the beach had to be closed because of undermining by wave erosion.

**Plant communities:** coastal strand, scrub.

**coastal strand:** (B) narrow strip of strand north of beach parking lot and east of A1A. Dominant species was saw palmetto (*Serenoa repens*), with lesser admixture of sea grape (*Coccoloba uvifera*) and Virginia live oak (*Quercus virginiana*). Moderate invasion by the exotic Brazilian pepper (*Schinus terebinthifolius*). Both sea grape and pepper were killed back by the freeze of December 1989. Sandy substrate is mixed with shell.

**scrub:** (A) low dense shrub stand west of A1A dominated by sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), and saw palmetto. Less common was the small-leaved form of buckthorn, lumped with the larger-leaved form (*Bumelia tenax*) by Clark (1942), but described as a separate species (*Bumelia lacuum*; Small, 1933). Yellow sand substrate with no shell admixed.

**Rare species:** scrub jay (*Aphelocoma coerulescens coerulescens*) - 1 pair seen on 2/15/90; loggerhead turtle (*Caretta caretta*) - 17 nests/km (Hopkins and Richardson, 1984).

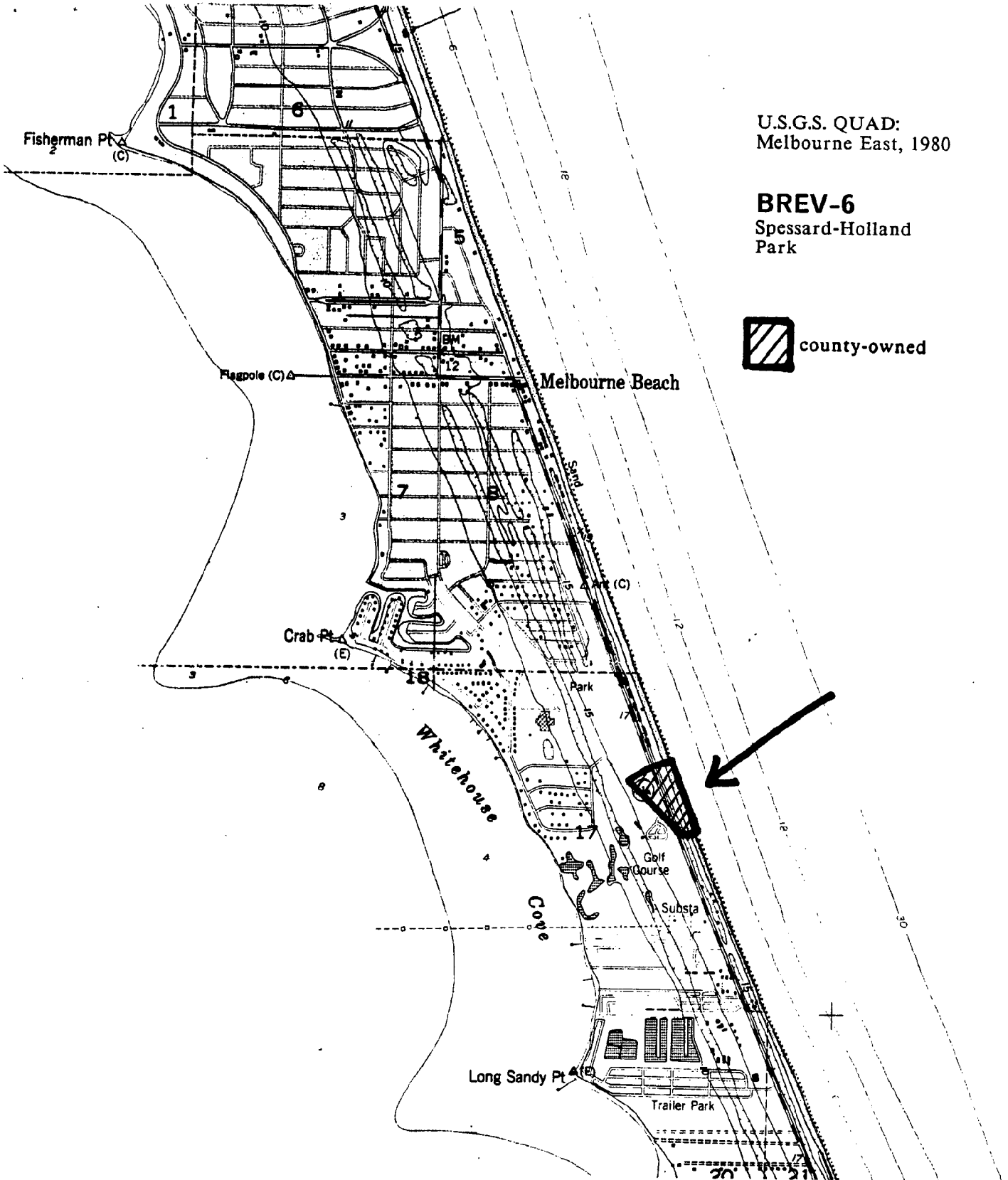
**Disturbance:** construction of golf course to south of present patch of scrub probably wiped out an area of scrub large enough to have supported a pair of scrub jays.

**Surrounding land use:** golf course to south (no natural roughs) and beach parking east of A1A; houses and playground to north and west.

**Ownership:** public: county

U.S.G.S. QUAD:  
Melbourne East, 1980

**BREV-6**  
Spessard-Holland  
Park



## Coastal Uplands Site Summary

### BREV-7

#### Coconut Point North, Brevard County, Florida.

Approximate acreage: 65

Topographic map: Melbourne East, Florida

Florida D.O.T. aerial photo: PD3813-14-13

Survey date: 15 February 1990 and 18 February 1990 (F90JOH07).

**Physical setting:** narrow portion of barrier island (less than 1/4 mile wide) north of slight broadening at Coconut Point. One-foot scarp cut into base of narrow sea oats dune fronting saw palmetto strand. Series of successively higher ridges extending inland from current foredune ridge. Ridges east of and immediately west of A1A bear strand vegetation characterized by Virginia live oak (*Quercus virginiana*), whereas those higher and further inland bear scrub characterized by sand live oak (*Quercus geminata*).

**Plant communities:** beach dune, coastal strand, scrub, shell mound.

**beach dune:** (A) Low sea oats (*Uniola paniculata*) dune with scattered shrubs of sea grape (*Coccoloba uvifera*) and dunelets of beach elder (*Iva imbricata*) and bitter panicum (*Panicum amarulum*) colonizing the upper beach.

**coastal strand:** (A) Grades from nearly pure stand of saw palmetto (*Serenoa repens*) east of A1A to a mixture of low shrubs, primarily Virginia live oak (*Quercus virginiana*), redbay (*Persea borbonia*), and buckthorn (*Bumelia tenax*), west of A1A.

**scrub:** (A+) Occupies next higher ridge west of A1A with a low, dense stand of spray-shorn shrubby oaks, i.e. sand live oak (*Quercus geminata*) and myrtle oak (*Quercus myrtifolia*). Heavy infestation of the native parasitic woevine (*Cassytha filiformis*) forming a mat over the shrubs was killed back by the freeze of December 1989. Substrate is yellow sand with some silt and fine shell fragments admixed.

**shell mound:** diverse tropical hammock on shell mound near the shore of Indian River lagoon with a canopy dominated by large tropical tree species including gumbo limbo (*Bursera simarouba*), mastic (*Mastichodendron foetidissimum*), and strangler fig (*Ficus aurea*). Some understory species show little damage from the freeze of December 1989, i.e. white indigoberry (*Randia aculeata*), marlberry (*Ardisia escallonioides*), and black ironwood (*Krugiodendron ferreum*). Large shells visible in places.

**Rare species:** scrub jay (*Aphelocoma coerulescens coerulescens*) - 1 tame pair seen 2/18/90; loggerhead turtle (*Caretta caretta*) - 143 nests/km (Hopkins and Richardson, 1984).


**Disturbance:** slight invasion by exotic Brazilian pepper (*Shinus terebinthifolius*) in lower areas and along the shore of Indian River.

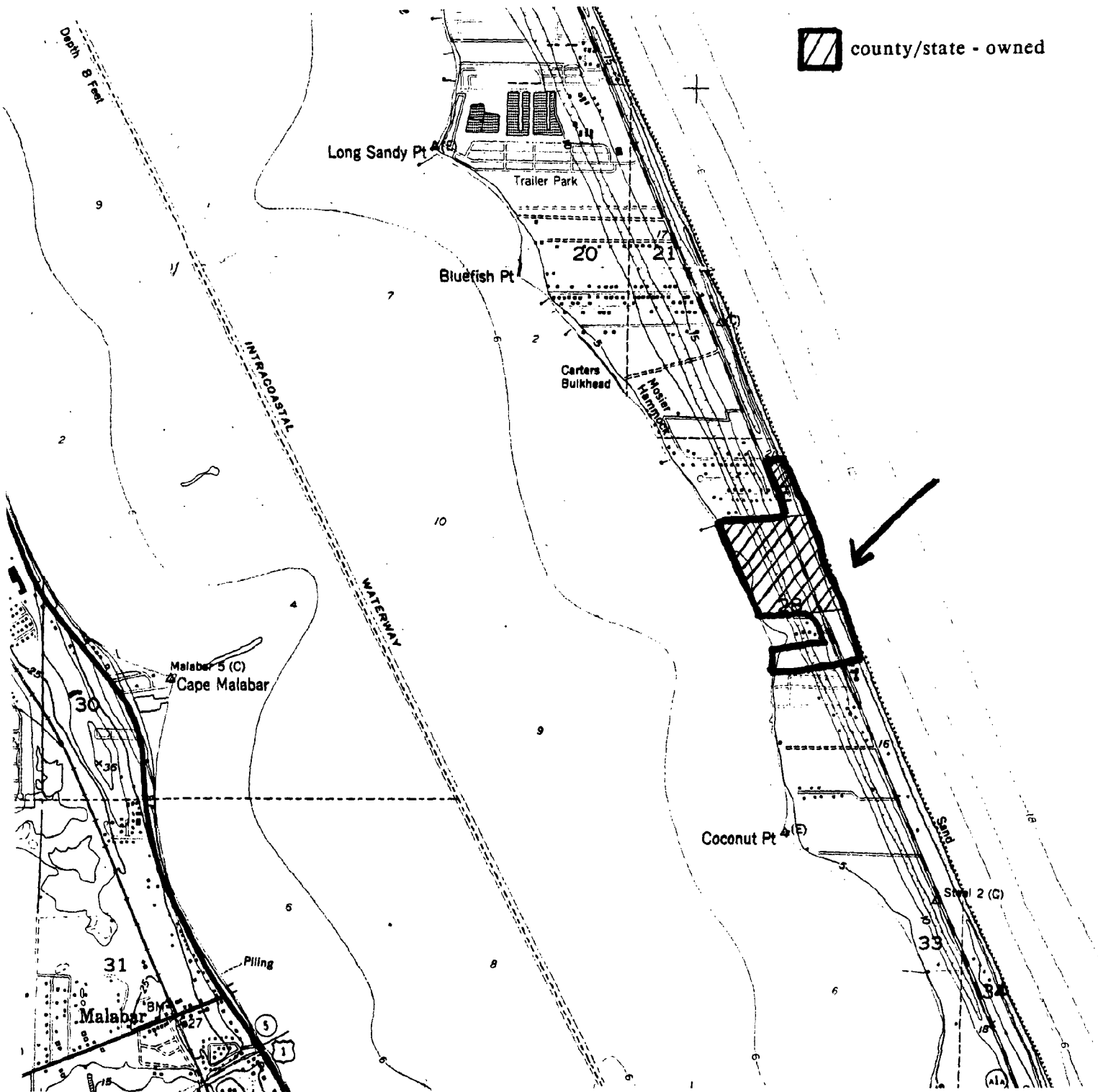
**Surrounding land use:** residential housing north and south and in center of southwestern portion.

**Ownership: public:** Northern 75% owned by Brevard County - Coconut Point Park and Sea Oats park - undeveloped (Snodgrass, 1990). Southern portion privately owned. [Entire parcel included in project boundaries of proposed Archie Carr National Wildlife Refuge (U.S. Fish and Wildlife Service, 1990).]

U.S.G.S. QUAD:  
Melbourne East, 1980

**BREV-7**  
Coconut Point North

 county/state - owned



## Coastal Uplands Site Summary

### BREV-8

#### Coconut Point, Brevard County, Florida.

Approximate acreage: 143

Topographic map: Melbourne East, Florida.

Florida D.O.T. aerial photo: 3813-14-13 & 15-10 (1//5/89)

Survey date: 16 February 1990 (F90JOH08).

**Physical setting:** Slightly broadened portion of barrier island composed of ridges parallel to the coastline. Beach shows no sea oats dune and a 5-foot scarp cut into saw palmetto strand. Erosion probably a result of the 1984 Thanksgiving Day storm (Balsillie, 1985).

**Plant communities:** coastal strand, scrub. Saw palmetto (*Serenoa repens*) strand on both sides of A1A grades into low scrub which extends almost to the lagoon. A few groves of cabbage palms and live oaks occur along the lagoon shore.

**coastal strand:** (B) dominated by saw palmetto with scattered shrubs of sea grape (*Coccoloba uvifera*) and Florida privet (*Forestiera segregata*).

**scrub:** (A) low spray-pruned scrub dominated by sand live oak (*Quercus geminata*) and myrtle oak (*Quercus myrtifolia*). Scraped areas have scattered oaks and openings with broomsedge (*Andropogon* sp), camphorweed (*Heterotheca subaxillaris*) and gopher apple (*Licania michauxii*). Heavy growth of the parasitic woevine (*Cassytha filiformis*) over the shrubs killed back by freeze of December 1989.

**Rare species:** scrub jay (*Aphelocoma coerulescens coerulescens*) - 4 birds seen in territorial display; gopher tortoise (*Gopherus polyphemus*) - active burrows seen along path 2/16/90; loggerhead turtle (*Caretta caretta*) - 129 nests/km (Hopkins and Richardson, 1984).


**Disturbance:** two portions of scrub area in process of recovering after having been scraped.

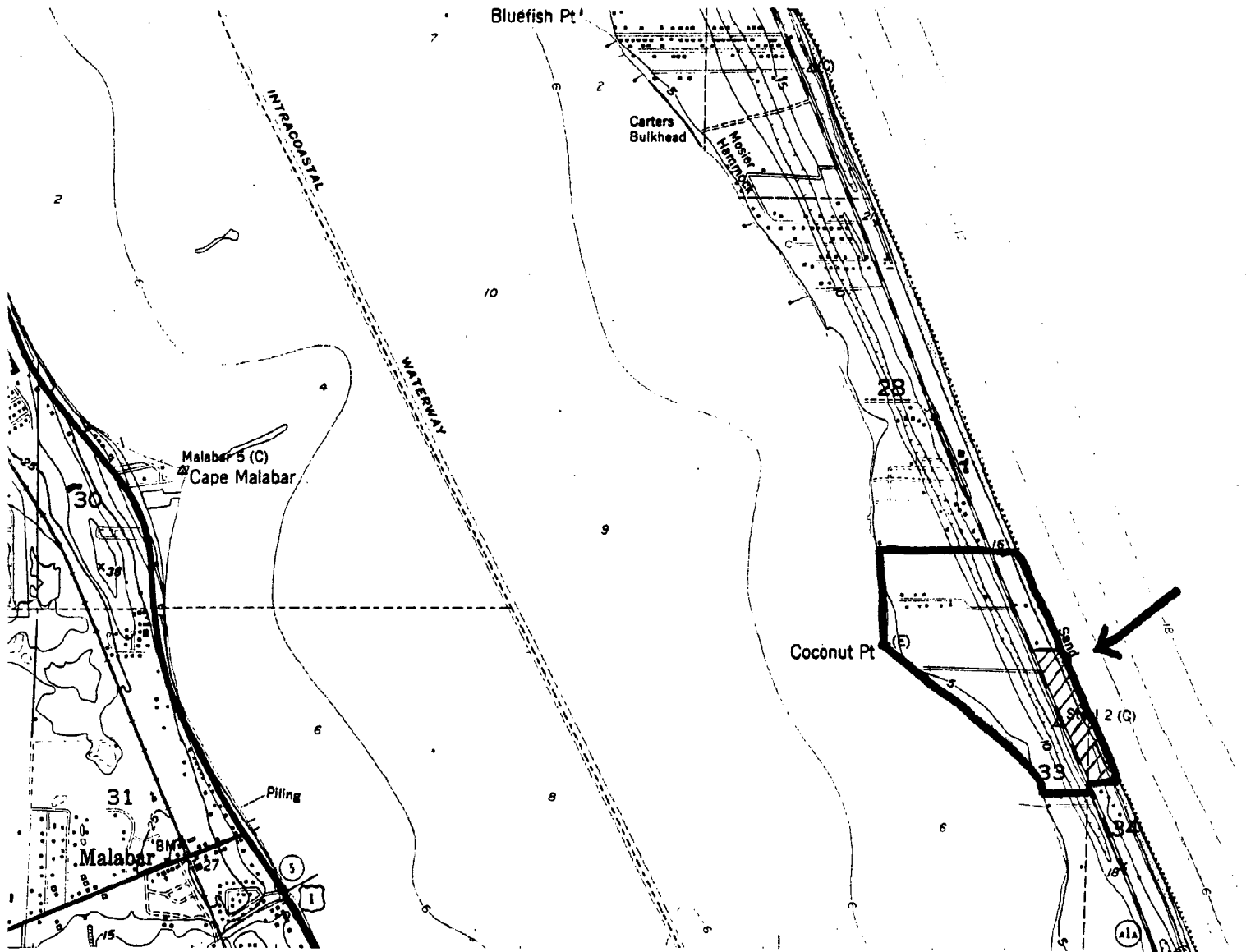
**Surrounding land use:** residential

**Ownership:** public; southern 2/3 of the portion east of A1A owned jointly by the state of Florida and Brevard County - South Beach Regional Park - undeveloped (Snodgrass, 1990). Remaining portion east of A1A included in project boundaries of proposed Archie Carr National Wildlife Refuge (U. S. Fish and Wildlife Service, 1990).

U.S.G.S. QUAD:  
Melbourne East, 1980

**BREV-8**  
Coconut Point

 county/state - owned



## Coastal Uplands Site Summary

### BREV-9

#### Sea Grape Manor North, Brevard County, Florida.

Approximate acreage: 83

Topographic map: Melbourne East, Grant

Florida D.O.T. aerial photo: PD3813-15-10 (1/5/89)

Survey date: 18 and 21 February 1990 (F90JOH09)

**Physical setting:** narrow portion of barrier island composed of a series of low ridges parallel to the coastline. Beach has no sea oats dune. A 12-foot scarp cut into saw palmetto zone has scattered beach elder (*Iva imbricata*) at base and beach cordgrass (*Spartina patens*) at crest. Area was heavily eroded (20-30' horizontal loss) in 1984 Thanksgiving Day Storm (Balsillie, 1985).

**Plant communities:** coastal strand, scrub, maritime hammock

**coastal strand:** (B) composed primarily of saw palmetto (*Serenoa repens*) and buckthorn (*Bumelia tenax*) with scattered low cabbage palms. Northern third recently burned. Moderate invasion of Brazilian pepper (*Schinus terebinthifolius*).

**scrub:** (B) open stand of sand live oak (*Quercus geminata*) somewhat disturbed by paths. Heavy infestation of native parasitic woevine (*Cassytha filiformis*) killed back by freeze of December 1989. Rare prickly apple (*Cereus gracilis*) found in disturbed portions of this community near A1A - often in areas transitional to strand and thus containing more tropical species, i.e. white indigoberry (*Randia aculeata*), myrsine (*Rapanea punctata*).

**maritime hammock:** (A) small stand in northwest corner of property is dominated by temperate trees in the canopy - redbay (*Persea borbonia*), cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*) and tropical shrubs in understory - marlberry (*Ardisia escallonioides*), wild coffee (*Psychotria nervosa*), whisk fern (*Psilotum nudum*). Hammock is surrounded by a dense stand of Brazilian pepper.

**Rare species:** prickly-apple (*Cereus gracilis*) - ca 40 plants were noted by Wickham (1988) at the southern boundary of the area (privately owned portion), close to A1A on both sides of the road. These plants were also noted in this survey (F90JOH09). One plant was seen near the north property boundary (publicly owned area) in this survey (F90JOH09) and 4 plants in this vicinity were noted by Wickham (1988); necklace pod (*Sophora tomentosa*) - 1 plant seen east of A1A along path through strand; scrub jay (*Aphelocoma coerulescens coerulescens*) - 4 birds were seen on telephone line at southeast border of tract and 2 birds were seen at north border of property west of A1A; gopher tortoise (*Gopherus polyphemus*) - reported by Harden and Harden, 1986 (middle tract); loggerhead turtle (*Caretta caretta*) - average of 488 nests/km of beach in the 21 km stretch from Melbourne Beach to Sebastian Inlet (Ehrhart and Witherington, 1986 - appendix to Harden and Harden, 1986); green turtle (*Chelonia mydas*) - average of 13 nests/km of beach in 21 km stretch of beach from Melbourne Beach to Sebastian Inlet in 1985 (Ehrhart and Witherington, 1986 - appendix to Harden and Harden, 1986).

**Disturbance:** dumping along sand roads; heavy invasion of exotic Brazilian pepper (*Schinus terebinthifolius*) along mangrove border.

**Surrounding land use:** residential/motel

**Ownership:** public: county/state: Northern 2/3 owned by state and managed by Brevard County - Twin Shores Park - undeveloped (Snodgrass, 1990). Formerly Walt Disney


## Coastal Uplands Site Summary

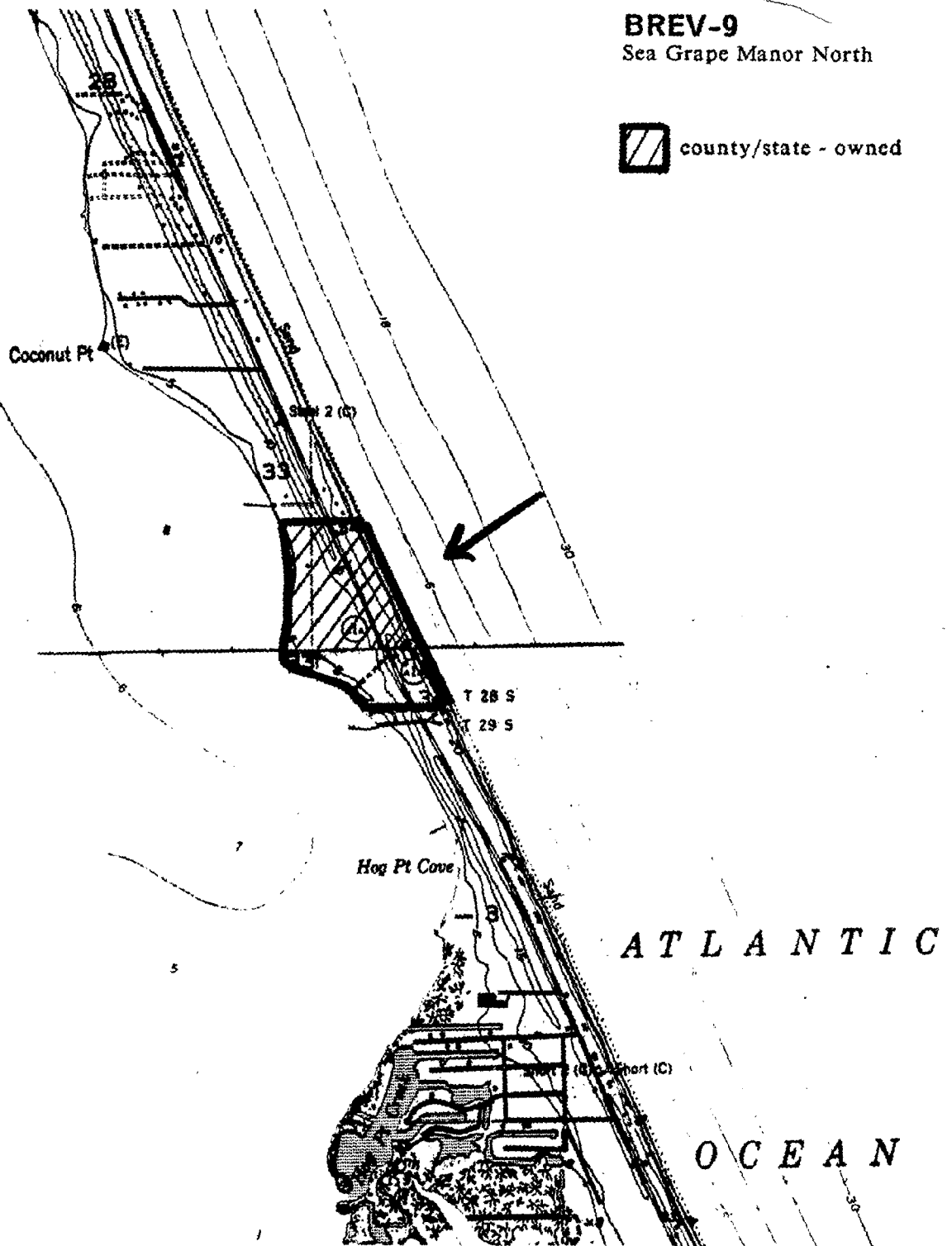
World Middle tract (B) tract; private: Southern portion. Entire portion east of A1A (but not west of A1A) included in project boundaries of proposed Archie Carr NWR (U.S. Fish and Wildlife Service, 1990).



U.S.G.S. QUAD:  
Melbourne East, 1980  
Grant, 1970

**BREV-9**  
Sea Grape Manor North

 county/state - owned



## Coastal Uplands Site Summary

### **BREV-10**

### **Hog Point Cove, Brevard County, Florida**

Approximate acreage: 66

Topographic map: Grant

Florida D.O.T. aerial photo: PD3813-15-10 (1/5/89)

Survey date: 21 February 1990 (F90JOH17)

**Physical setting:** narrow portion of barrier consisting of a low (15-ft) ridge parallel to coastline. Area is broken up by houses into 4 segments west of A1A and 2 segments east of the road.

**Plant communities:** coastal strand

**coastal strand:** (A) East of A1A this community is dominated by saw palmetto (*Serenoa repens*) with low cabbage palms (*Sabal palmetto*) protruding; west of A1A a diversity of shrubs compose a dense, spray-pruned "hedge" reaching to the lagoon shore. Prominent in this community are nakedwood (*Myrcianthes fragrans*), buckthorn (*Bumelia tenax*), and Virginia live oak (*Quercus virginiana*).

**Rare species:** necklace pod (*Sophora tomentosa*) - occasional on edges of strand; scrub jay (*Aphelocoma coerulescens coerulescens*) - 3 birds seen 2/21/90; loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986); gopher tortoise (*Gopherus polyphemus*) - University of Michigan specimen (no date).

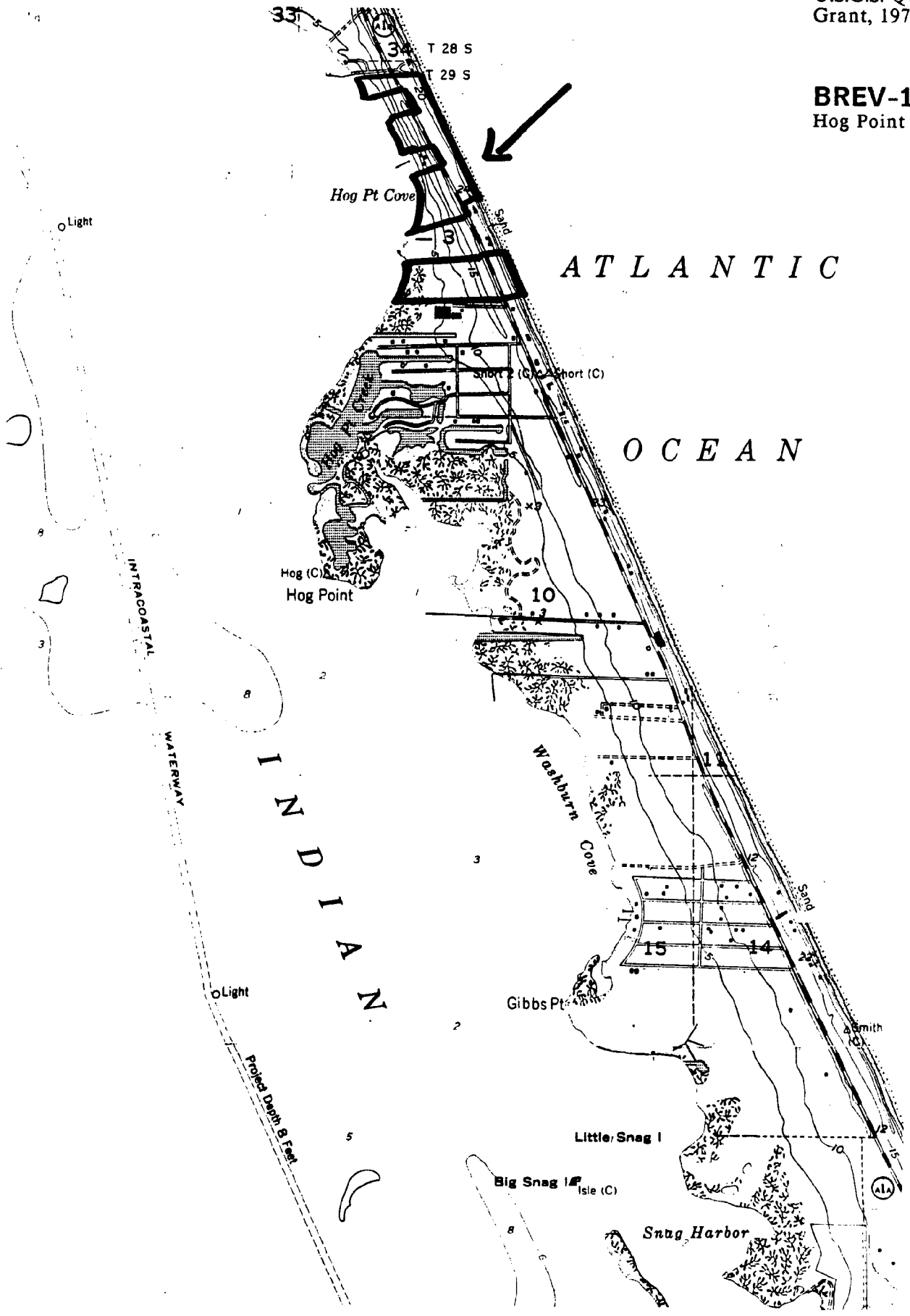
**Disturbance:** the southern segment west of A1A has been disturbed and is invaded by the exotic Brazilian pepper (*Schinus terebinthifolius*).

**Surrounding land use:** residential

**Ownership:** Private: northern 2/3 owned by Walt Disney World Company (Melbourne Beach property, south tract - Harden and Harden, 1986). Entire portion east of A1A (but none west of A1A) included in project boundaries of proposed Archie Carr NWR (U.S. Fish and Wildlife Service, 1990). Southern boundary of the tract is the southern boundary of segment one of the proposed refuge.

U.S.G.S. QUAD:  
Grant, 1970

**BREV-10**  
Hog Point Cove



## Coastal Uplands Site Summary

### BREV-11

### Hog Point, Brevard County, Florida

Approximate acreage: 33

Topographic map: Grant

Florida D.O.T. aerial photo: PD3813-15-10 (1/5/89)

Survey date: 21 February 1990 (F90JOH18)

**Physical setting:** one-half-mile wide portion of barrier island of gently undulating ridges parallel to the coastline. Shrubby strand grades into maritime hammock.

**Plant communities:** coastal strand, maritime hammock.

**coastal strand:** (A) diverse stand of dense shrubs whose canopy grades upward from 5 ft near A1A to 15 ft inland where the overstory/understory structure of maritime hammock appears. Major species are redbay (*Persea borbonia*), buckthorn (*Bumelia tenax*), wax myrtle (*Myrica cerifera*), and saw palmetto (*Serenoa repens*).

**maritime hammock:** (A) canopy of low, spreading Virginia live oaks (*Quercus virginiana*) with epiphytes such as butterfly orchid (*Encyclia tampensis*) and resurrection fern (*Polypodium polypodioides*) along their branches. Understory of tropical shrubs, primarily marlberry (*Ardisia escallonioides*) and myrsine (*Rapanea punctata*) with poison ivy (*Toxicodendron radicans*) common on margin of the stand.

**Rare species:** coastal vervain (*Glandularia maritima*)- seen along northern edge of cleared strip; gopher tortoise (*Gopherus polyphemus*) - 2 active burrows in cleared strip; loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986).

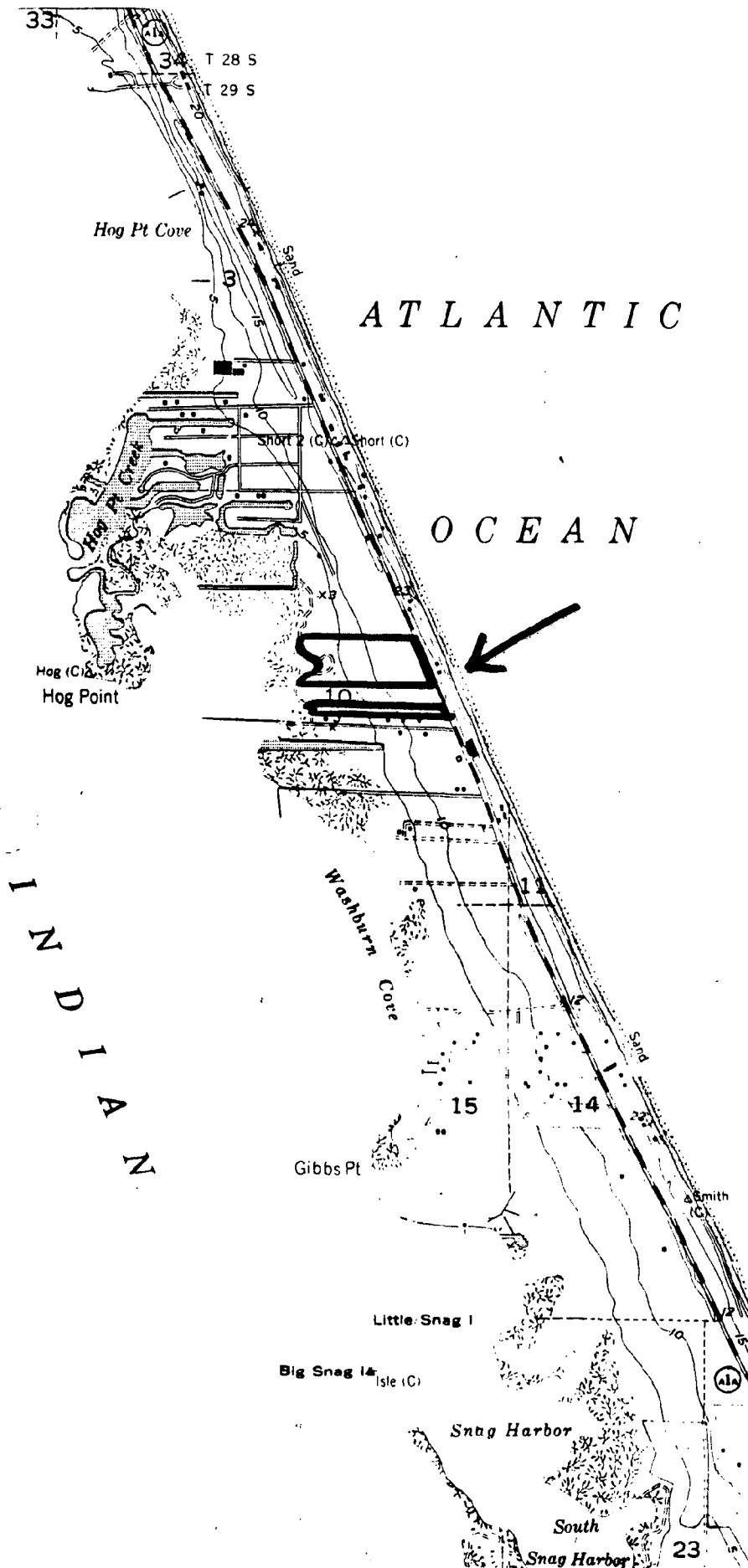
**Disturbance:** A strip through the property about 200 ft wide at right angles to the shoreline both east and west of A1A has been scraped of woody vegetation and, near the coast is recovering in beach cordgrass (*Spartina patens*). Other weeds and shrubs colonizing farther inland.

**Surrounding land use:** residential

**Ownership: Private:** (Although area is within the area of highest nesting densities of loggerhead turtles, it is not included in the project boundaries (i.e. between segments 1 and 2) of the proposed Archie Carr National Wildlife Refuge (U.S. Fish and Wildlife Service, 1990).)

U.S.G.S. QUAD:  
Grant, 1970

**BREV-11**  
Hog Point



## Coastal Uplands Site Summary

### BREV-12

#### Washburn Cove, Brevard County, Florida

Approximate acreage: 35

Topographic map: Grant

Florida D.O.T. aerial photo: PD3813-15-08 (1/5/89)

Survey date: 21 February 1990 (F90JOH19)

Physical setting: one-half-mile wide barrier composed of gently undulating ridges parallel to the coastline.

Plant communities: maritime hammock

maritime hammock: (A) Accessible via survey lines cut through it. Canopy grades upward toward the west from a height of 15 ft nearer the coast to 30 ft inland. Dominated by temperate trees, principally Virginia live oak (*Quercus virginiana*) and redbay (*Persea borbonia*) with scattered tropical trees in the canopy i.e., gumbo limbo (*Bursera simarouba*) and inkwood (*Exothea paniculata*); understory of saw palmetto (*Serenoa repens*), nakedwood (*Myrcianthes fragrans*), and myrsine (*Rapanea punctata*). Epiphytes are common on limbs of oaks including butterfly orchid (*Encyclia tampensis*) and resurrection fern (*Polypodium polypodioides*). On southwest corner of area is a small shell mound with live oak and cabbage palm and also with several tropical species not seen in the rest of the area, i.e. lancewood (*Nectandra coriacea*) and white stopper (*Eugenia axillaris*). This mound had been partially excavated but no record exists with state Division of Historical Resources (Department of State; Taylor, pers. comm., 1990).

Rare species: coastal vervain (*Glandularia maritima*)- several plants along path into north end of area; loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986).

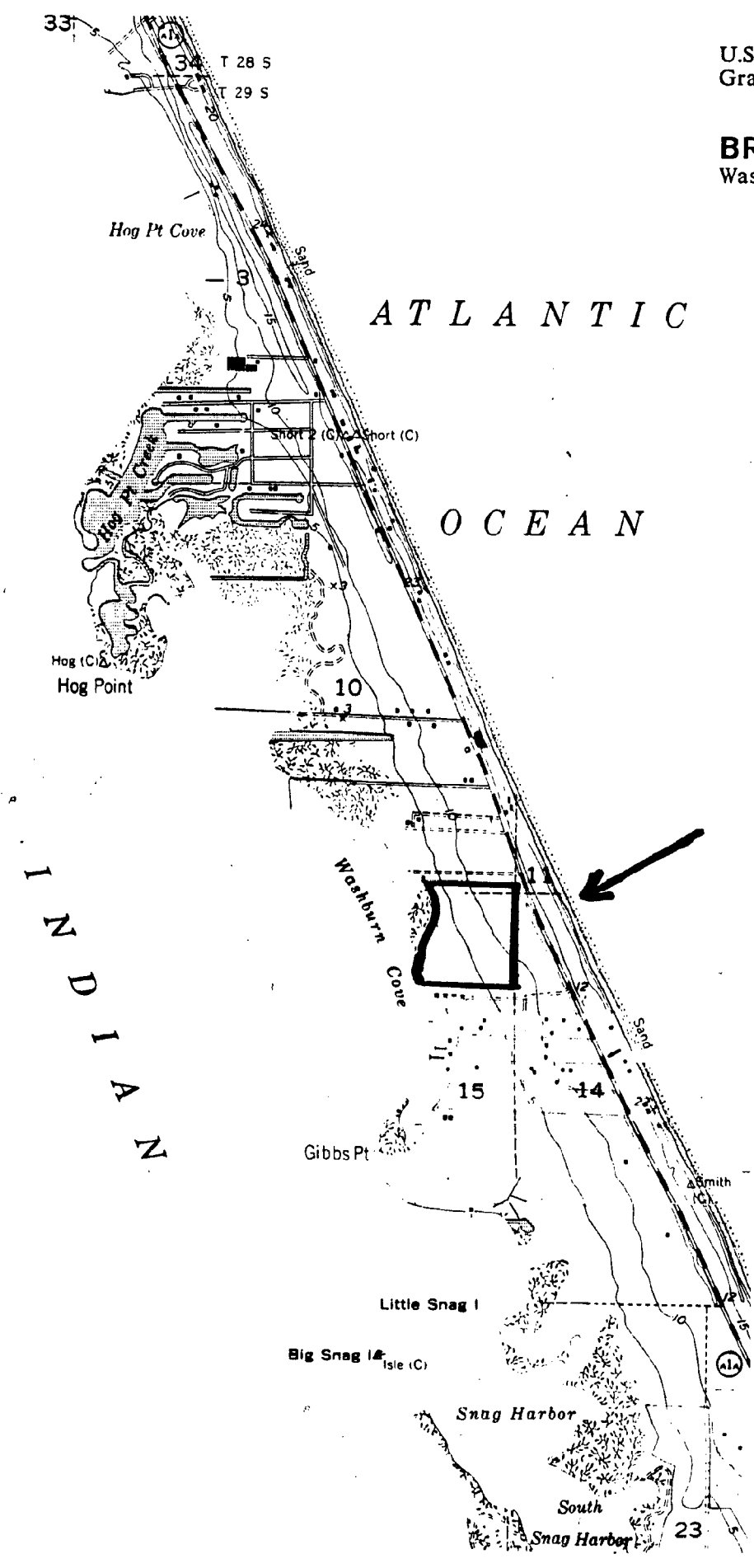
Disturbance: strand zone east and west of A1A disturbed by clearing and house building resulting in invasion by the exotic Brazilian pepper (*Schinus terebinthifolius*).

Surrounding land use: residential

Ownership: Private.

U.S.G.S. QUAD:  
Grant, 1970

**BREV-12**  
Washburn Cove



## Coastal Uplands Site Summary

### BREV-13

#### North Floridana Beach, Brevard County, Florida.

Approximate acreage: 231

Topographic map: Grant

Florida D.O.T. aerial photo: PD3813-15-08

Survey date: 22 February 1990 (F90JOH20)

**Physical setting:** 3/4 mile-wide portion of barrier island with gently undulating ridges parallel to the coastline. On its seaward side saw palmetto borders a sloping cliff to beach covered by sea oats. Lack of vegetation on upper beach indicates recent wave activity to base of cliff.

**Plant communities:** coastal strand, maritime hammock

**coastal strand:** (A) shrub canopy grades upward inland reaching 6-7 ft in height near A1A. Major species is saw palmetto (*Serenoa repens*) with low cabbage palms (*Sabal palmetto*) protruding above the canopy. Farther inland more shrub species are present, principally nakedwood (*Myrcianthes fragrans*), buckthorn (*Bumelia tenax*), and redbay (*Persea borbonia*).

**maritime hammock:** (A+) mature canopy of temperate trees including redbay (*Persea borbonia*), Virginia live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*). Many epiphytes on the trees, including butterfly orchid (*Encyclia tampensis*), wild pines (*Tillandsia* spp), and resurrection fern (*Polypodium polypodioides*). Understory of tropical and temperate shrubs, principally wild coffee (*Psychotria nervosa*), nakedwood (*Myrcianthes fragrans*), buckthorn (*Bumelia tenax*), and saw palmetto. Dominance of cabbage palms increases toward the lagoon. Two archaeological sites are mapped near the lagoon shore (Taylor, pers. comm., 1990).

**Rare species:** coastal vervain (*Glandularia maritima*) - occasional in clearings in strand and hammock; loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984); two archaeological sites are mapped on the area on the bayshore (Taylor, 1990).

**Disturbance:** central strip cleared for development (bankrupt).

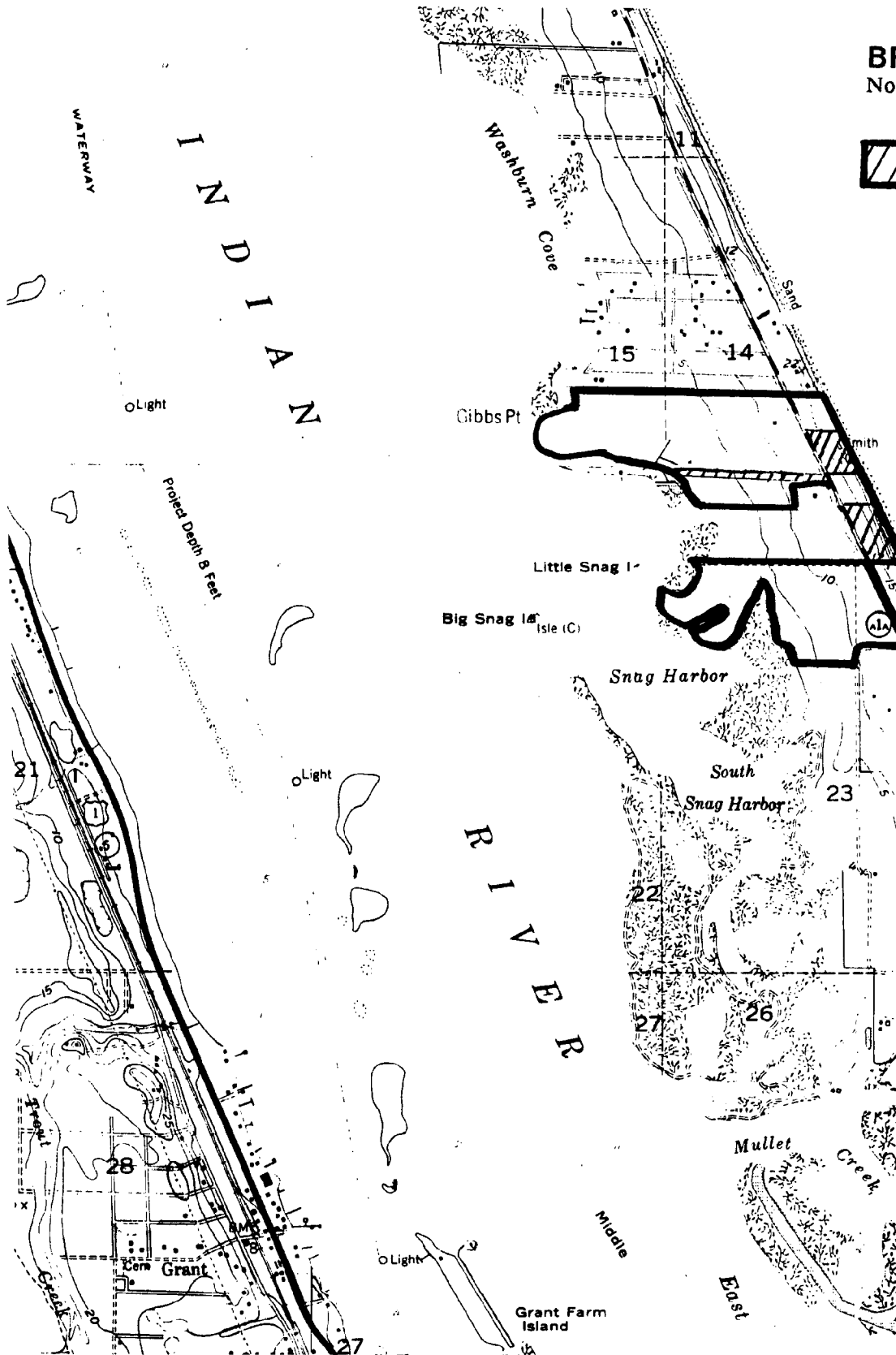
**Surrounding land use:** residential to north; citrus grove to south.

**Ownership:** public: about 2/3 of the strand area east of A1A and a slender strip of hammock west of A1A is owned by the state of Florida and managed by Brevard County (Apollo Eleven Park and Judith Resnick Memorial Park - undeveloped; Snodgrass, 1990). private: remainder (90 per cent of acreage).

U.S.G.S. QUAD:  
Grant, 1970

**BREV-13**  
North Florida Beach

 county/state - owned



## Coastal Uplands Site Summary

### **BREV-14**

#### **Honest John's Fish Camp, Brevard County, Florida.**

**Approximate acreage:** 39

**Topographic map:** Grant

**Florida D.O.T. aerial photo:** PD3815-15-08, 16-06 (1/5/89)

**Survey date:** 18 February 1990 (F90JOH10)

**Physical setting:** higher land above mangrove border in wider (1 mile wide) portion of barrier island.

**Plant communities:** maritime hammock

**maritime hammock:** (B) tall canopy of temperate species, primarily cabbage palm (*Sabal palmetto*), Virginia live oak (*Quercus virginiana*), and redbay (*Persea borbonia*) with numerous wild pine species (*Tillandsia* spp) on their branches. Sparse understory of temperate saw palmetto (*Serenoa repens*), bracken fern (*Pteridium aquilinum*), and tropical shrubs and herbs including myrsine (*Rapanea punctata*) and nakedwood (*Myrcianthes fragrans*).

**Rare species:**

**Disturbance:** ditching and diking for mosquito control (Brevard County). Moderate exotic invasion by Brazilian pepper (*Schinus terebinthifolius*) in hammock understory.

**Surrounding land use:** water or mangroves to north, west, and south, citrus groves to east.

**Ownership:** private: Roger and Barbara Arthur, 750 Mullet Creek Road, Melbourne Beach, FL 32951. (407) 727-2923.

U.S.G.S. QU  
Grant, 1970

**BREV-14**  
Honest John's  
Fish Camp



## Coastal Uplands Site Summary

### BREV-15

#### **Aquarina, Brevard County, Florida.**

Approximate acreage: 132

Topographic map: Sebastian NW

Florida D.O.T. aerial photo: PD3813-16-06 (1/5/89)

Survey date: 18 February 1990 (F90JOH11)

**Physical setting:** (southern portion of area outlined not seen) Low, broad portion of the barrier island ca 0.75 miles wide. Undulating topography not evident.

**Plant communities:** maritime hammock

**maritime hammock:** (A+) diverse hammock with well-developed understory layer. Oak/palm canopy has occasional trees of the tropical inkwood (*Exothea paniculata*) scattered through it; there has been little to no exotic invasion except on disturbed margin of the mangrove fringe where Australian pine (*Casuarina equisetifolia*) and Brazilian pepper (*Schinus terebinthifolius*) form pure stands in some areas. Epiphytic wild pines (*Tillandsia* spp.), butterfly orchid (*Encyclia tampensis*), and resurrection fern (*Polypodium polypodioides*) coat the limbs of the oaks.

**Rare species:** coastal vervain (*Glandularia maritima*) - several plants in flower in disturbed grassy area on northeast portion of development; gopher tortoise (*Gopherus polyphemus*) - about 25 active burrows (ca 1 /50 yds) and 1 tortoise seen along berm on northeast edge of property; loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986).

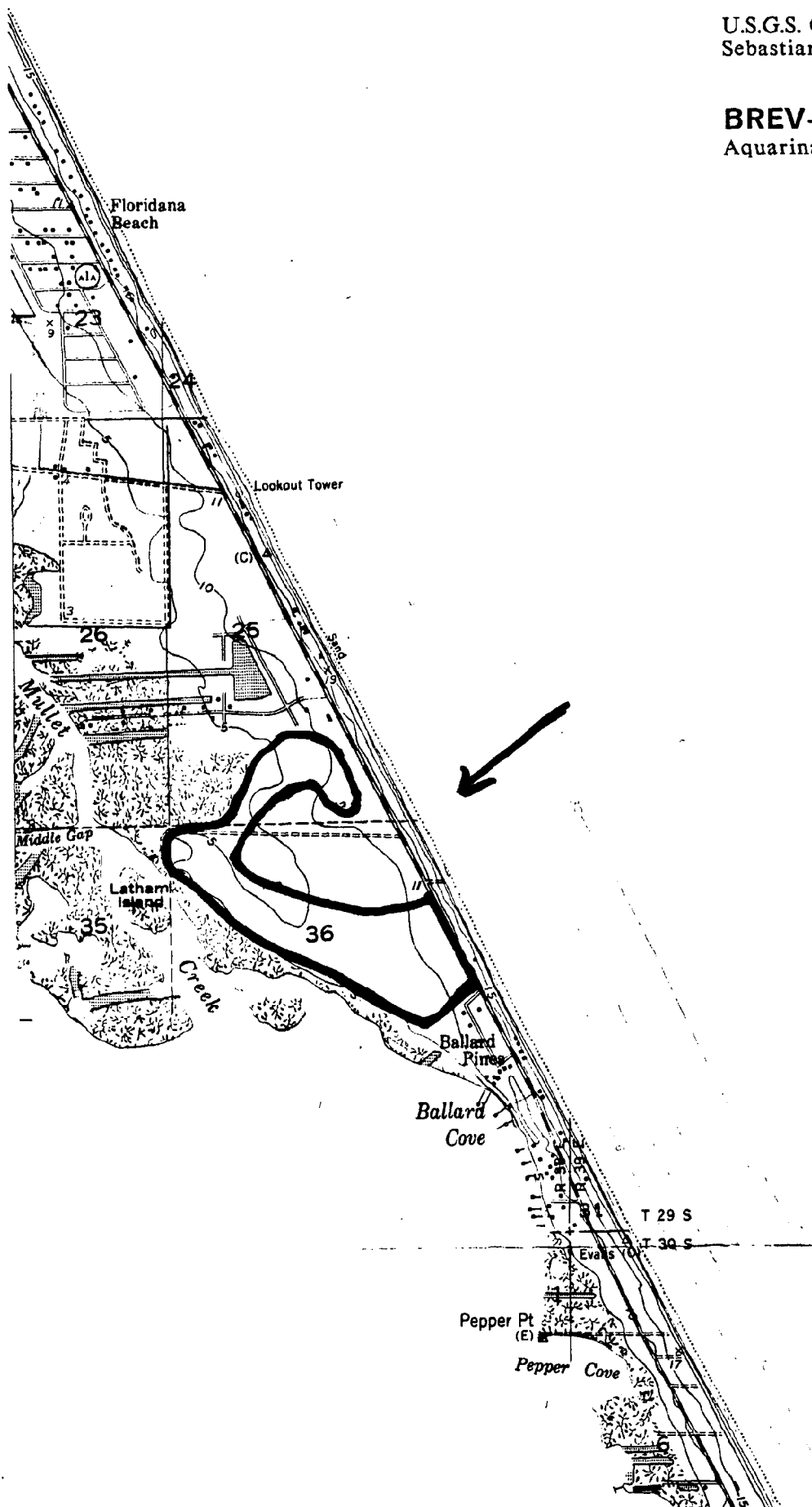
**Disturbance:** development has begun with the building of houses, swimming pool, tennis courts, and boardwalk along Indian River in central portion of the tract, plus sewage treatment tanks on south border of the property.

**Surrounding land use:** residential

**Ownership: private:** Aquarina, Philip Schick, sales manager, 388 Aquarina Blvd., Melbourne Beach, Florida 32951. (407) 729-0677.

U.S.G.S. QUAD:  
Sebastian NW, 1970

**BREV-15**  
Aquarina



## Coastal Uplands Site Summary

### BREV-16

#### Pepper Cove, Brevard County, Florida

Approximate acreage: 33

Topographic map: Sebastian NW

Florida D.O.T. aerial photo: PD3813-17-04

Survey date: 22 February 1990 (F90JOH21)

**Physical setting:** upland portion of barrier very narrow (ca 800 ft wide) in this area. Strips of natural vegetation alternate with strips of windbreaks of Australian pine (*Casuarina equisetifolia*), marinas, houses, a restaurant, and a recently scraped area east of A1A which is heavily invaded by the exotic Brazilian pepper (*Schinus terebinthifolius*).

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) narrow sea oats ledge cut by recent high tides (12/6/90). Beach backed by abrupt slope of sea grape (*Coccoloba uvifera*) with saw palmetto (*Serenoa repens*) on crest.

**coastal strand:** (A) diverse "hedge" of temperate shrubs including redbay (*Persea borbonia*), buckthorn (*Bumelia tenax*), saw palmetto (*Serenoa repens*) and tropical shrubs - with a greater incidence of tropical shrubs undamaged by the freeze of December 1989 than is found to the north, i.e. white indigoberry (*Randia aculeata*) and myrsine (*Rapanea punctata*).

**maritime hammock:** (B) canopy dominated by cabbage palm with scattered tropical trees such as inkwood (*Exothea paniculata*), gumbo limbo (*Bursera simarouba*) and blolly (*Guapira discolor*).

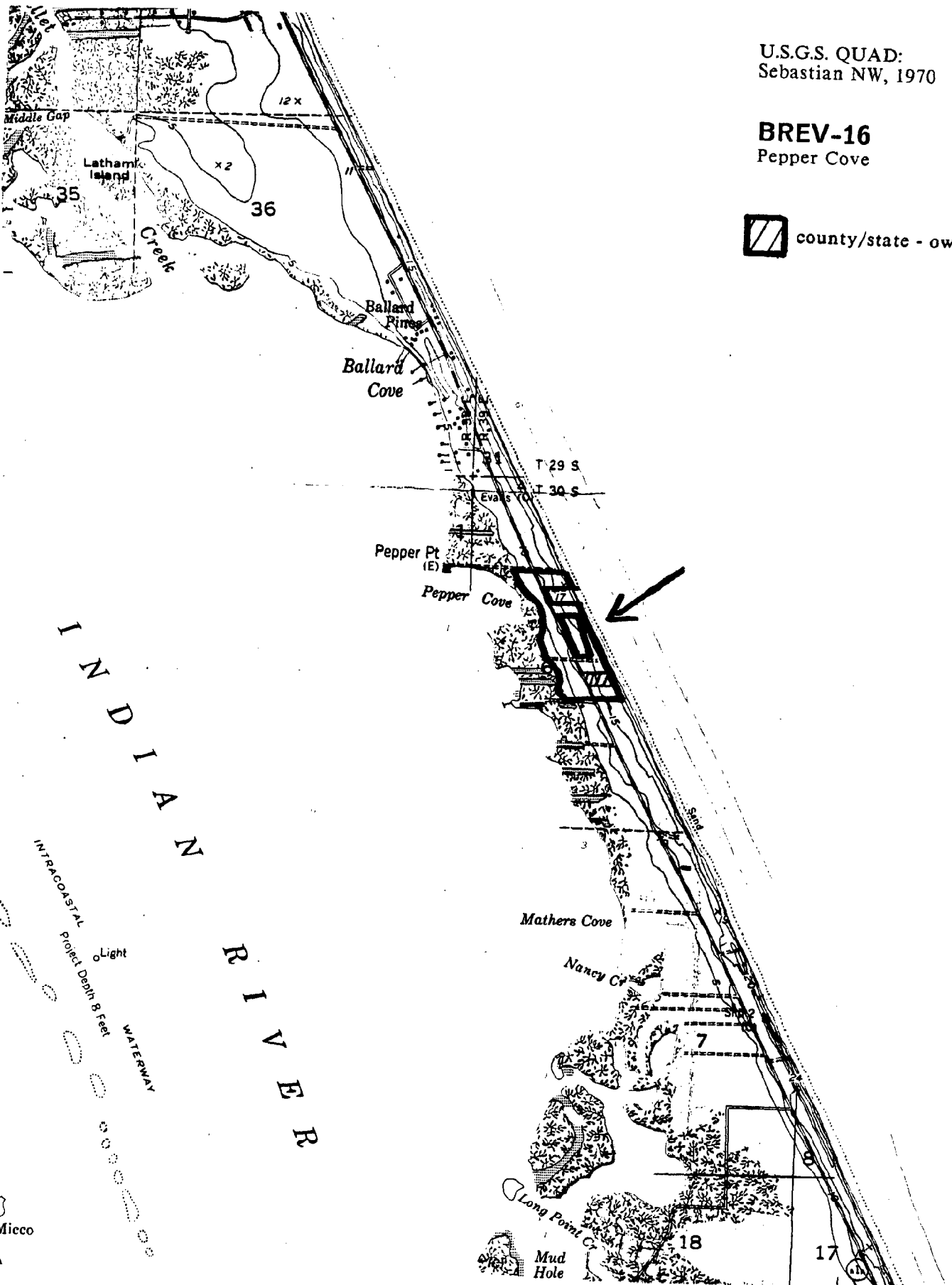
**Rare species:** prickly apple (*Cereus gracilis*) - 8 plants reported just north of the area outlined on west side of A1A (Wickham, 1988; NEED TO REVISIT to determine whether this is the area cleared in 1989 photo (3813-16-06); loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986).

**Disturbance:** moderate to heavy exotic invasion by Australian pine and Brazilian pepper in disturbed portions of mangrove, hammock, and strand vegetation. Portion of strand cleared and now reprofiting.

**Surrounding land use:** residential, marina, restaurant.

**Ownership:** public: a 2.2 acre rectangle E of A1A is owned by state and managed by Brevard County (Louis Bonsteel III Memorial Park; Snodgrass, 1990); private: remaining acreage. (Area east of A1A is included in project boundaries of proposed Archie Carr National Wildlife Refuge (U.S.Fish and Wildlife Service, 1990).

**BREV-16**  
Pepper Cove



## Coastal Uplands Site Summary

### **BREV-17**

#### **North Sebastian Inlet, Brevard County, Florida.**

**Approximate acreage:** 332

**Topographic map:** Sebastian NW, Sebastian

**Florida D.O.T. aerial:** PD3813-17-04 (1/5/89)

**Survey date:** 22 February and 4 December 1990 (F90JOH22 & 86)

**Physical setting:** broad low area of barrier island only slightly elevated above level of mangrove fringe.

**Plant communities:** beach dune, strand, maritime hammock

**beach dune:** (A) continuous with and similar to BREV-18

**strand:** (A) dominated by buckthorn (*Bumelia tenax*), live oak (*Quercus virginiana*), and redbay (*Persea borbonia*) with scattered tropical species.

**maritime hammock:** (A+) tall (60 ft) palm/oak hammock grading to pure palm near the border with mangroves; well developed understory of small tropical trees and shrubs, including marlberry (*Ardisia escallonioides*), myrsine (*Rapanea punctata*), nakedwood (*Myrcianthes fragrans*), pidgeon plum (*Coccoloba diversifolia*), and wild coffee (*Psychotria nervosa*). Tropical hammock in the center dominated by gumbo limbo (*Bursera simarouba*), wild lime (*Zanthoxylum fagara*), and torchwood (*Amyris elemifera*) has been knocked back by freeze of December 1989 and is re-sprouting.

**Rare species:** Florida lantana (*Lantana depressa* var *floridana*) - one pure and several hybrid plants seen along west side A1A; prickly apple (*Cereus gracilis*) - 36 plants found to north of area (Wickham, 1988); loggerhead turtle (*Caretta caretta*) - 449 nests/km (Hopkins and Richardson, 1984; Ehrhart and Witherington, 1986).

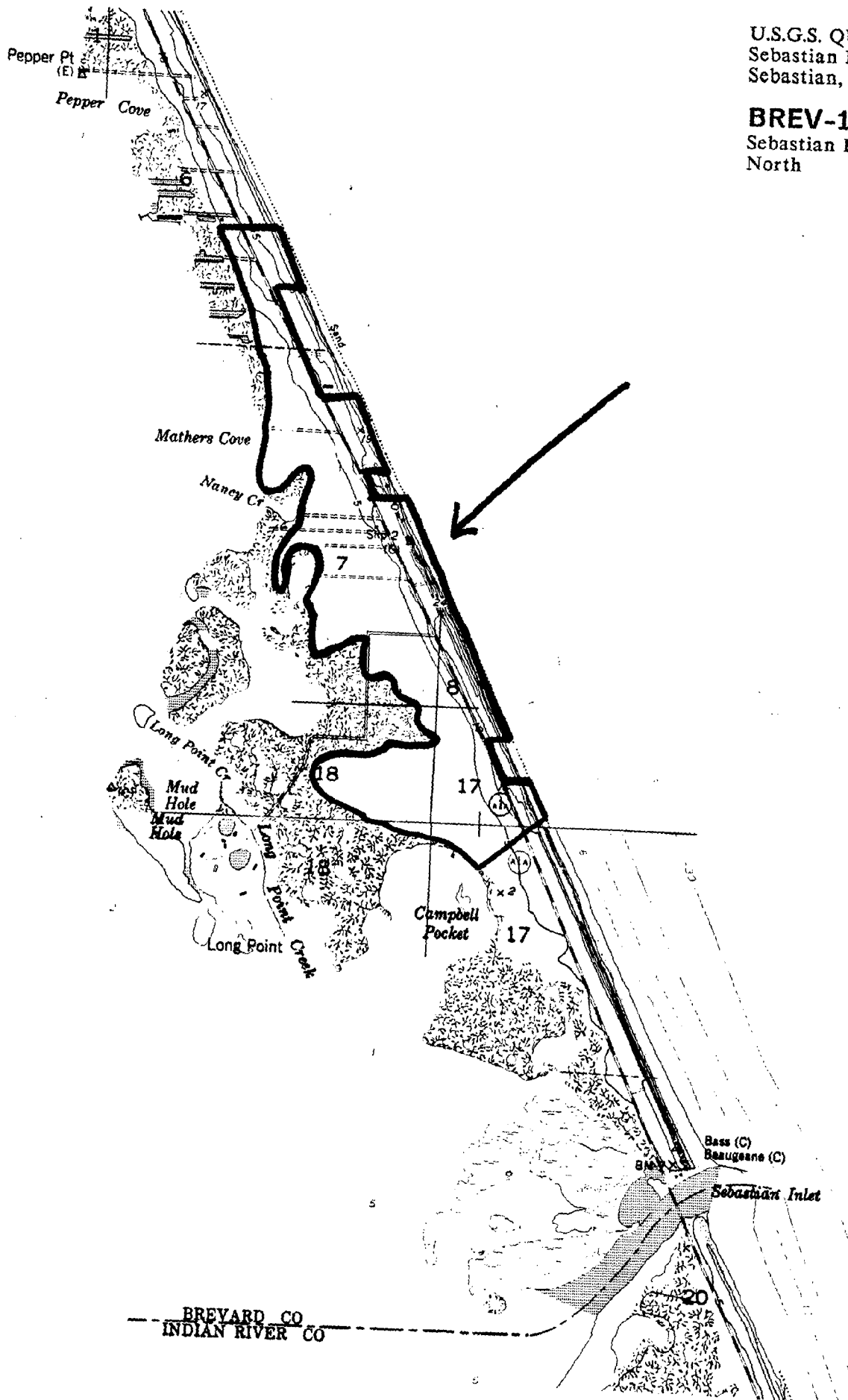
**Disturbance:** some exotic invasion of Brazilian pepper (*Schinus terebinthifolius*) around edges of mangroves, and in portions of strand that have been chopped in northern section. Papaya (*Carica papaya*) has heavily invaded the southern portion of the tropical hammock in the center of the site.

**Surrounding land use:** fish camp, supplies store.

**Ownership:** private. area east of A1A is within the project boundaries of the proposed Arcie Carr National Wildlife Refuge (U.S. Fish and Wildlife Service, 1990).

U.S.G.S. QUAD:  
Sebastian NW, 1970  
Sebastian, 1970

**BREV-17**  
Sebastian Inlet  
North



## Coastal Uplands Site Summary

### BREV-18

#### Sebastian Inlet State Recreation Area, Brevard County, Florida.

Approximate acreage: 99

Topographic map: Sebastian

Florida D.O.T. aerial photo: PD3813-17-04 (1/5/89)

Survey date: 17 February 1990 (F90JOH12)

**Physical setting:** broader portion of the barrier island with substantial area of hammock and a broad, prograding beach dune area on updrift side of Sebastian Inlet jetty.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A+) - broad beach with two rows of sea oats dunes.

Scattered clumps of tropical species in sea oats zone killed back by freeze of December 1989, including necklace pod (*Sophora tomentosa*), beach creeper (*Ernodea littoralis*), white indigoberry (*Randia aculeata*), seagrape (*Coccoloba uvifera*), and cocoplum (*Chrysobalanus icaco*).

**coastal strand:** (A+) diverse mixture of shrubs with canopy reaching 15 ft near A1A grading to almost pure saw palmetto (*Serenoa repens*) near the upper beach. Prominent near A1A is hercules' club (*Zanthoxylum clava-herculis*) and nakedwood (*Myrcianthes fragrans*).

**maritime hammock:** (A+) oak/palm hammock with canopy rising from 15 ft near A1A to 60 ft near lagoon border. Tropical species are found in both canopy and understory and their presence increases closer to the lagoon. Freeze of December 1989 killed back many tropical trees including inkwood (*Exothea paniculata*), strangler fig (*Ficus aurea*), and mastic (*Mastichodendron foetidissimum*).

**Rare species:** prickly apple (*Cereus gracilis*) - found in dune scrub and palm areas in 1971; Roberts, pers. comm., 1971); coastal vervain (*Glandularia maritima*) - opening in strand community; Florida lantana (*Lantana depressa*) - collected by Johnson in 1985 in coastal strand and identified by David Hall, University of Florida); necklace pod (*Sophora tomentosa*) - edges of strand; loggerhead turtle (*Caretta caretta*) - ca 125 nests/km (Miller, pers. comm., 1990).

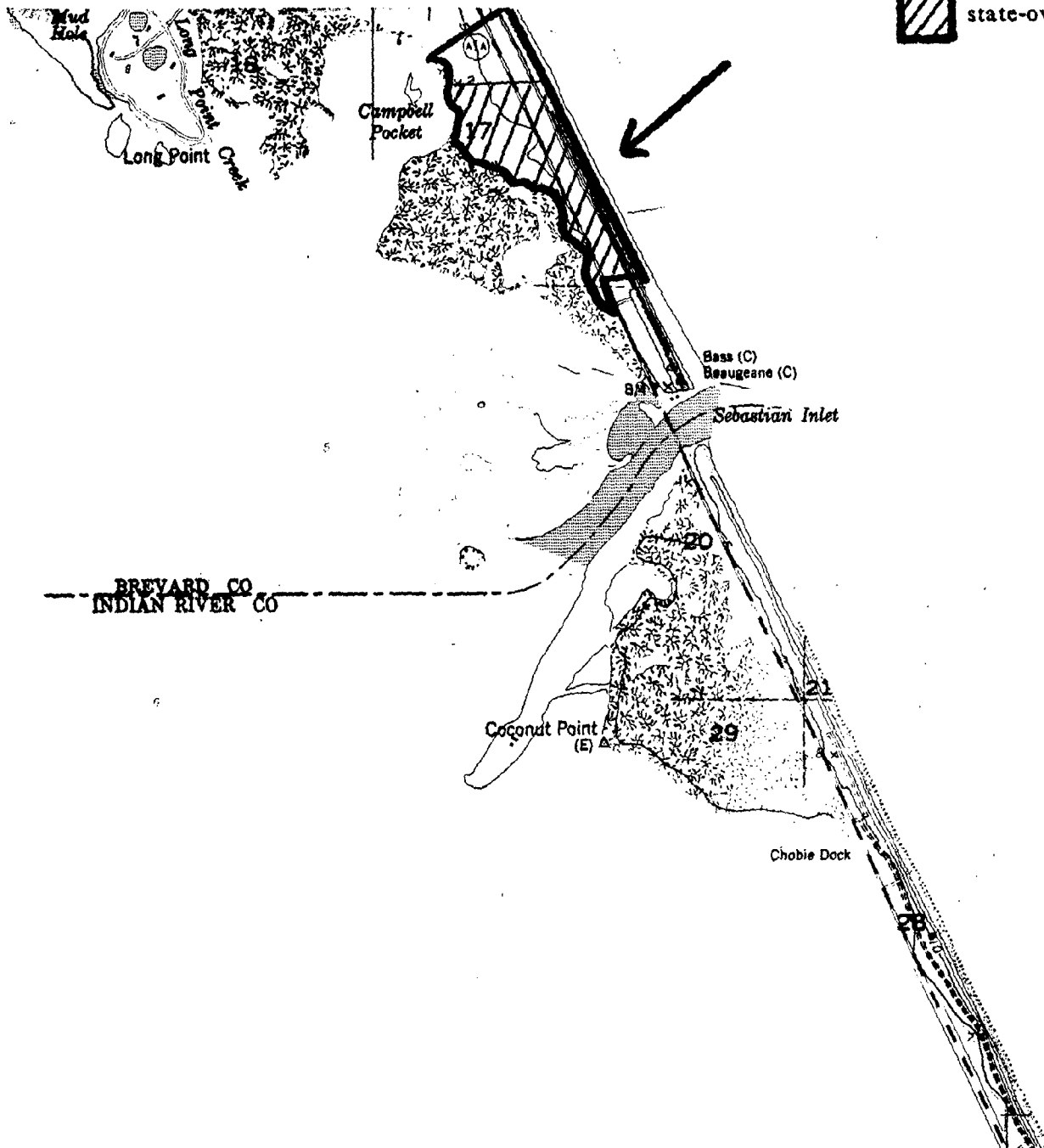
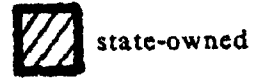
**Disturbance:** ditching and diking around mangrove border for mosquito control permitted invasion by exotic Brazilian pepper (*Schinus terebinthifolius*); Australian pine invasion in disturbed areas where spoil dumped near jetty and where beach parking lot, bathhouses, and store were built.

**Surrounding land use:** residential and "short-stop" store.

**Ownership:** public: state (southern 3/4 of area is part of Sebastian Inlet State Recreation Area); private: northern 1/4 is private and was proposed for acquisition by the now defunct Save Our Coast program.

U.S.G.S. QUAD:  
Sebastian, 1970

**BREV-18**  
Sebastian Inlet  
State Recreation  
Area



## Coastal Uplands Site Summary

### INDI-1

#### Sebastian Inlet South, Indian River County, Florida.

Approximate acreage: 102

Topographic map: Sebastian

Survey date: 9 August 1983 (F83BUR01 - Burch & Posin, 1983)

Physical setting: narrow barrier island ca 600 ft wide in this stretch.

**Plant communities:** beach dune, coastal strand, maritime hammock - east of A1A between 1.35 and 1.44 miles south of bridge over Sebastian Inlet.

**beach dune:** (B) 8-ft scarp in north end dropping off to low dune to south dominated by beach cordgrass (*Spartina patens*) and beach elder (*Iva imbricata*). Other common species are sea purslane (*Sesuvium portulacastrum*) and railroad vine (*Ipomoea pes-caprae*). The beachberry (*Scaevola plumieri*) is frequent.

**coastal strand:** (A/B) mixture of equal parts of sea grape (*Coccoloba uvifera*) and saw palmetto (*Serenoa repens*) with spanish stopper (*Eugenia foetida*) becoming more common towards A1A.

**maritime hammock:** (B) major canopy species are sea grape (*Coccoloba uvifera*), gumbo limbo (*Bursera simarouba*), and pigeon plum (*Coccoloba diversifolia*). Understory composed primarily of the tropical shrubs, spanish stopper and marlberry (*Ardisia escallonioides*).

**Rare species:** necklace pod (*Sophora tomentosa*) - north end behind foredune; sand-dune spurge (*Chamaesyce cumulicola*) - scattered along crest of dune.

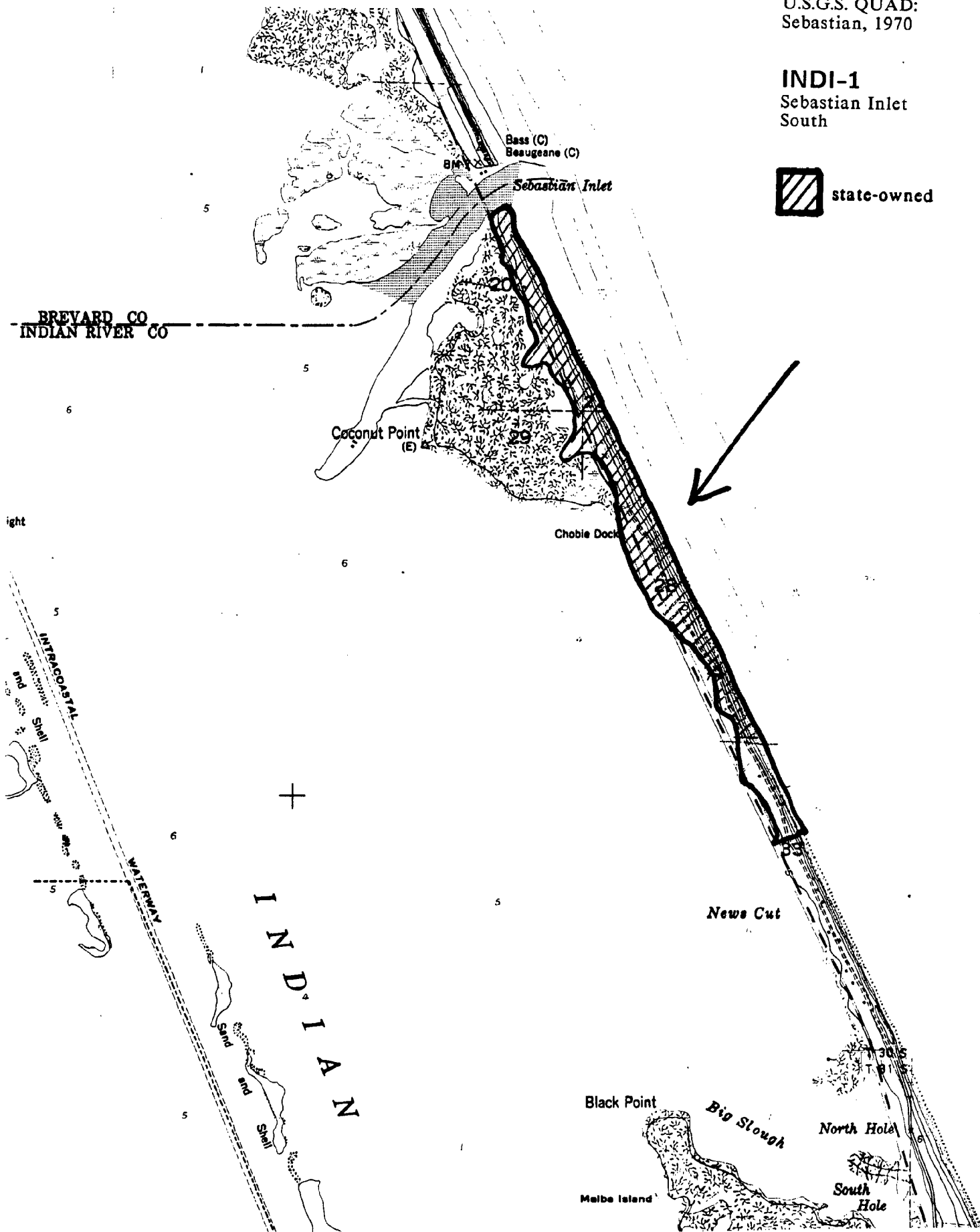
**Disturbance:** Brazilian pepper (*Schinus terebinthifolius*) has invaded along A1A; remains of old A1A present parallel to the coast behind the foredune.

**Surrounding land use:** State park to north; residential to south.

**Ownership:** public: state (Sebastian Inlet State Recreation Area); private: southern 1/5 of area.

U.S.G.S. QUAD:  
Sebastian, 1970

INDI-1  
Sebastian Inlet  
South



## Coastal Uplands Site Summary

### INDI-2

#### North end of Jungle trail, Indian River County, Florida.

Approximate acreage: 280

Topographic map: Sebastian

Florida D.O.T. aerial photograph: PD3621-15-19

Survey date: 22 February 1990 (F90JOH23)

**Physical setting:** tropical hammock on shell mound bordering mangrove swamp on west side of A1A; beach dune, maritime hammock, and coastal strand east of A1A (F83BUR02 - Burch and Posin, 1983).

**Plant communities:** beach dune, coastal strand, maritime hammock, shell mound

**beach dune:** (B) narrow upper beach zone fronting a scarp cut into saw palmetto zone. Major species are beach cordgrass (*Spartina patens*), shore paspalum (*Paspalum distichum*), and bitter panicum (*Panicum amarum* var *amarulum*).

**coastal strand:** (A+) dominated by saw palmetto (*Serenoa repens*) with scattered sea grape (*Coccoloba uvifera*) nearest the shore; nakedwood (*Myrcianthes fragrans*) and other shrubs becoming prominent farther inland from the coast grading to maritime hammock.

**maritime hammock:** (A) canopy dominated by temperate Virginia live oak (*Quercus virginiana*) and redbay (*Persea borbonia*), some over 2' in diameter. Tropical trees scattered throughout the canopy i.e., gumbo limbo (*Bursera simarouba*), mastic (*Mastichodendron foetidissimum*), graytwig (*Schoepfia chrysophylloides*) and strangler fig (*Ficus aurea*). Understory of marlberry (*Ardisia escallonioides*) and nakedwood (*Myrcianthes fragrans*).

**shell mound:** (A) cabbage palms predominate with remaining canopy trees evenly distributed between tropical and temperate species - live oak (*Quercus virginiana*), red mulberry (*Morus rubra*), strangler fig (*Ficus aurea*), mastic (*Mastichodendron foetidissimum*) and inkberry (*Exothea paniculata*). Understory dominated by laurel cherry (*Prunus caroliniana*) and marlberry (*Ardisia escallonioides*).

**Rare species:** coastal vervain (*Glandularia maritima*) - edges and openings in hammock; devil's shoestring (*Tephrosia angustissima*) - in scrub (Swain, 1990); loggerhead turtle (*Caretta caretta*) - 150 nests/km in 1989 (Vaughan, 1989).


**Disturbance:** moderate invasion of Brazilian pepper (*Schinus terebinthifolius*) around mangrove fringe. Clearing near dirt road heading east off A1A.

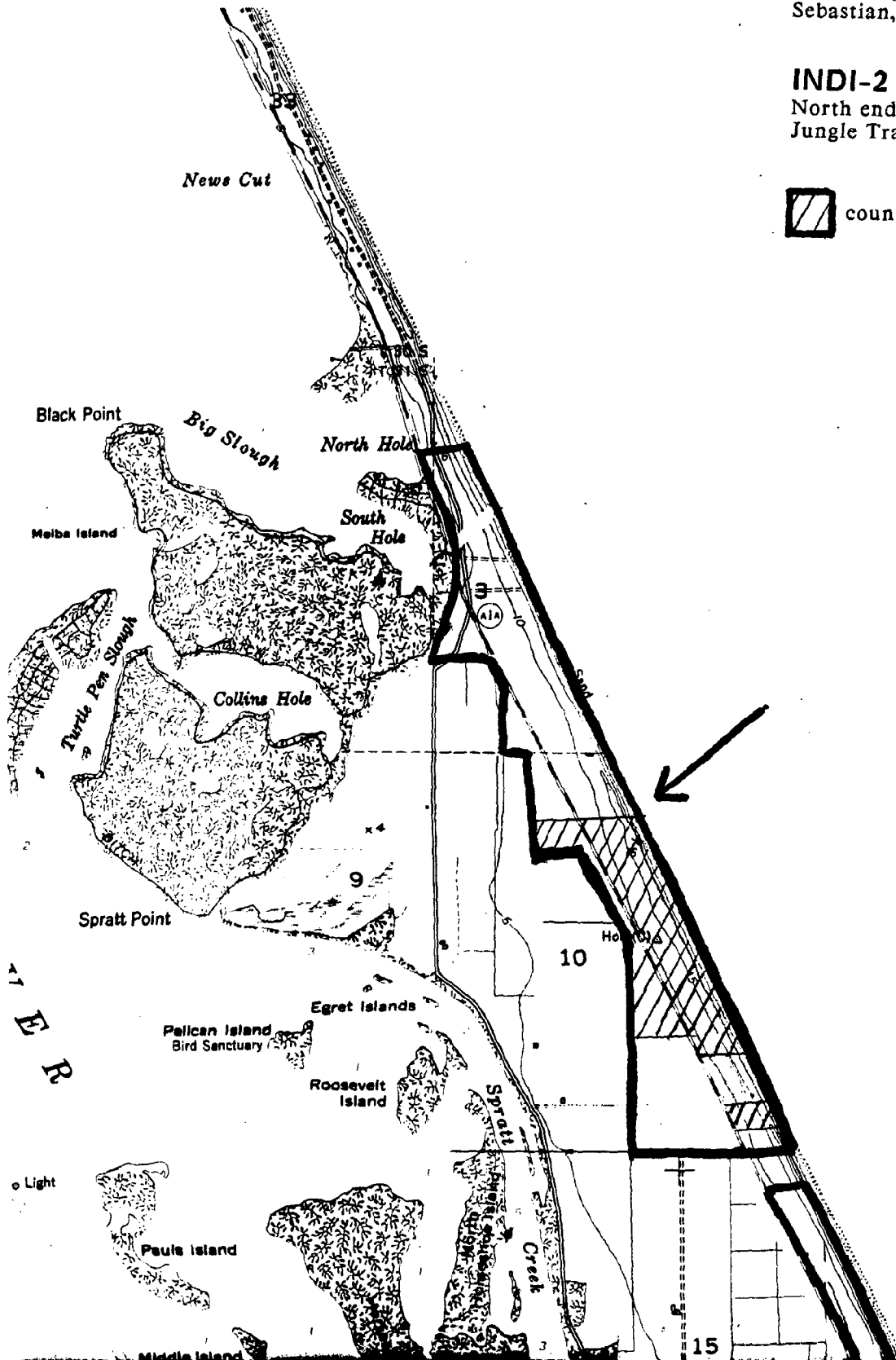
**Surrounding land use:** citrus grove to west and south; strand to east of A1A; and mangroves to north.

**Ownership:** public: county/state own about 30% of the area (Treasure Shores Park - undeveloped). private: remaining 70% of area. Entire area is within the project boundaries of proposed Wabasso Beach C.A.R.L. project. Area east of A1A also included in project boundaries of proposed Archie Carr National Wildlife Refuge (USFWS, 1990).

U.S.G.S. QUAD:  
Sebastian, 1970

**INDI-2**  
North end of  
Jungle Trail

 county/state - owned



## Coastal Uplands Site Summary

### INDI-3

#### Golden Sands County Park, Indian River County, Florida.

Approximate acreage: 176

Topographic map: Sebastian

Florida D.O.T. aerial photograph: PD3621-15-17 (2/25/88)

Survey date: 22 February 1990 (F90JOH24)

**Physical setting:** barrier island about 3/4 mi wide sloping gradually toward the lagoon from a high elevation of 20 ft near the ocean. Ten-foot scarp above beach cut into saw palmetto (*Serenoa repens*) strand indicates recent erosion. Beach profiles taken in this area show a 15 to 20' recession of the dune line between 1972 and 1986 (Division of Beaches and Shores, Florida Department of Natural Resources).

**Plant communities:** beach dune, coastal strand, maritime hammock (this survey and Johnson, 1987).

**beach dune:** (C) scattered plants on upper beach at base of scarp include beach cordgrass (*Spartina patens*), railroad vine (*Ipomoea pes-caprae*), beach sunflower (*Helianthus debilis*) and saltgrass (*Distichlis spicata*). Beach was also noted as eroded in 1983 (Burch and Posin, 1983, F83BUR03).

**coastal strand:** (A) saw palmetto near coast with canopy grading upward. Composed farther inland of a diversity of dwarfed trees and shrubs, primarily redbay (*Persea borbonia*), nakedwood (*Myrcianthes fragrans*), cabbage palm (*Sabal palmetto*), and buckthorn (*Bumelia tenax*).

**maritime hammock:** (A) low canopy (25') of temperate trees, primarily Virginia live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), and redbay (*Persea borbonia*) with understory of nakedwood (*Myrcianthes fragrans*), myrsine (*Rapanea punctata*), and buckthorn (*Bumelia tenax*).

**Rare species:** loggerhead turtle (*Caretta caretta*) - 150 nests/km (Vaughan, 1989); devil's shoestring (*Tephrosia angustissima*) - 10 plants seen along path through strand community (Burch and Posin, 1983, F83BUR03)

**Disturbance:** invasion of exotic Brazilian pepper (*Schinus terebinthifolius*) along the inland mangrove fringe and along A1A. Parking lot in Golden Sands Park exposed hammock canopy to salt burn from spray carried off the ocean.

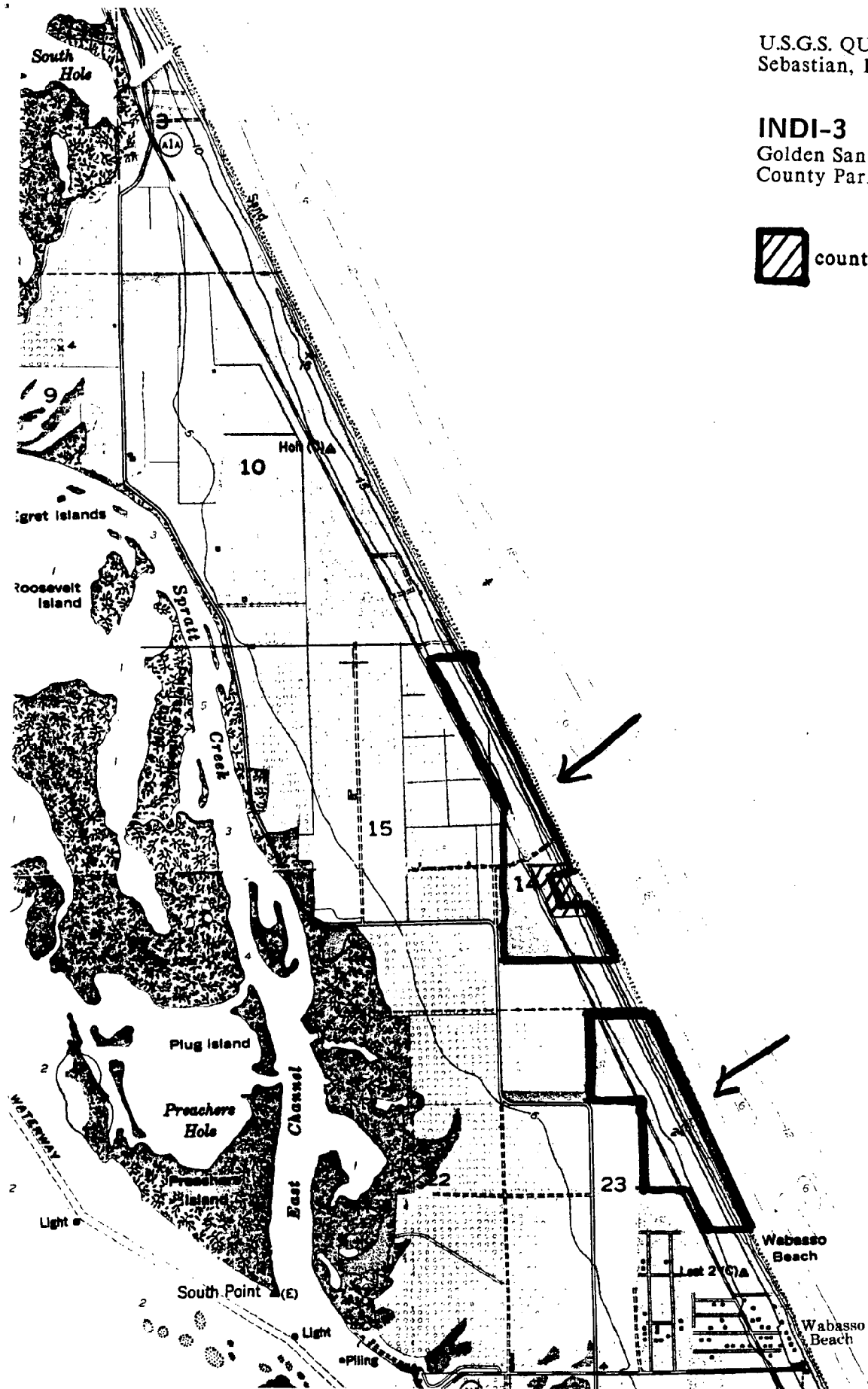
**Surrounding land use:** polo club, residences, and citrus groves to west; clearing to north and residential homes to south (Wabasso Beach). Beach club (Orchid Island) interrupts natural area east of A1A at south end of property.

**Ownership:** public: county - (Golden Sands Park); private: remainder.

**INDI-3**  
Golden Sands  
County Park



county-owned



## Coastal Uplands Site Summary

### INDI-4

#### South of Wabasso Beach Park, Indian River County, Florida.

Approximate acreage: 77

Topographic map: Sebastian

Florida D.O.T. aerial: PD3621-16-14 (2/25/88)

Survey date: 19 February 1990 (F90JOH13)

**Physical setting:** width of upland portion of the barrier island is ca 3/4 mi wide and consists of a series of gently undulating ridges parallel to the coastline. Lack of plant colonization at base of a 5-ft scarp in saw palmetto zone above beach is evidence of recent wave erosion. Severe erosion also noted in 1983 (Burch & Posin, 1983, F83BUR04). Three north/south survey lines provide access to the hammock west of A1A and south of SR510.

**Plant communities:** beach dune, coastal strand, maritime hammock

beach dune: (C) severe erosion into saw palmetto zone.

coastal strand: (A) occurs east of A1A and near the beach is dominated by saw palmetto (*Serenoa repens*) with clumps of low cabbage palms (*Sabal palmetto*) and occasional patches of seagrape (*Coccoloba uvifera*) and cocoplum (*Chrysobalanus icaco*). Farther inland the saw palmetto gives way to buckthorn (*Bumelia tenax*), live oak (*Quercus virginiana*) and nakedwood (*Myrcianthes fragrans*).

maritime hammock: (A) fire scars (prior to 1983 - Burch and Posin, 1983, F83BUR04) on cabbage palms indicate a young hammock with a 30-40 ft, open canopy dominated by cabbage palm, live oak, and redbay (*Persea borbonia*) and understory of poison ivy (*Toxicodendron radicans*), myrsine (*Rapanea punctata*), wild coffee (*Psychotria nervosa*), and saw palmetto. Epiphytes not common, consisting primarily of serpent fern (*Phlebodium aureum*) and shoestring fern (*Vittaria lineata*).

**Rare species:** loggerhead turtle (*Caretta caretta*) - no data but probable since nesting density is 150/km to north of here (Vaughn, 1989).

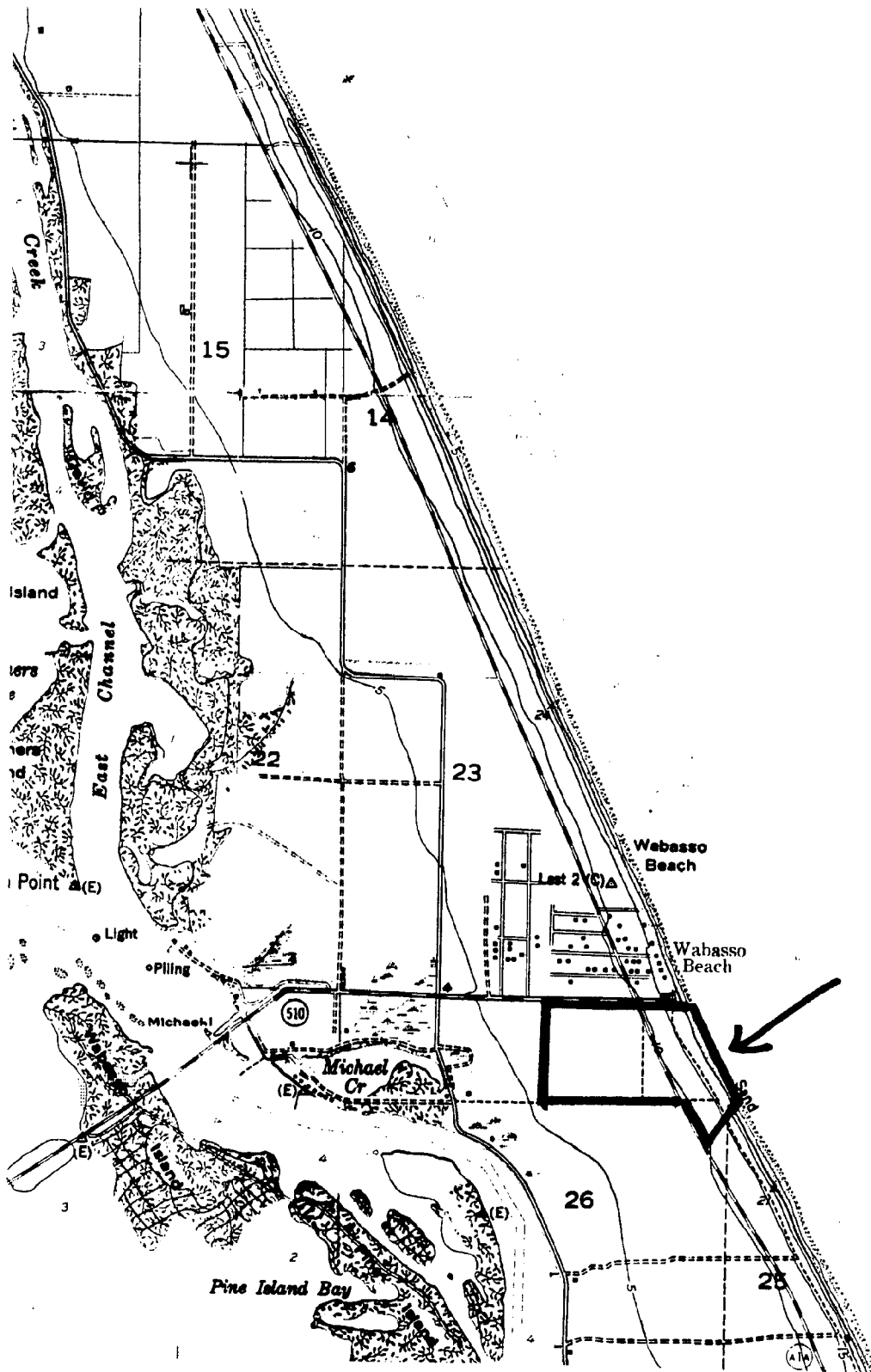
**Disturbance:** moderate invasion by exotic Brazilian pepper (*Schinus terebinthifolius*) in strand and hammock understory.

**Surrounding land use:** citrus grove to west; SR510 and county park (Wabasso Beach) to north; cleared land for development to south on west side of A1A and developed on east side.

**Ownership: private:** Mr. Gordon Nutt

U.S.G.S. QUAD:  
Sebastian, 1970

**INDI-4**  
South of Wabasso  
Beach Park



## Coastal Uplands Site Summary

### INDI-5

#### North of Baytree Development, Indian River County, Florida.

Approximate acreage: 120

Topographic map: Sebastian, Vero Beach

Florida D.O.T. aerial photography: PD3621-16-14 (2/25/88)

Survey date: 19 February 1990 (F90JOH14)

Physical setting: barrier island ca 1/2 mi wide sloping from highest elevation (20') near ocean gradually downward to the shore of the lagoon.

Plant communities: beach dune, coastal strand, maritime hammock

beach dune: (C) eroded to base of saw palmettos

coastal strand: (A) grades to hammock west of A1A. Saw palmetto dominates from the foredune to ca 100 yds inland where it is gradually replaced by a diverse mixture of shrubs and small trees, including nakedwood (*Myrcianthes fragrans*), myrsine (*Rapanea punctata*), redbay (*Persea borbonia*), and buckthorn (*Bumelia tenax*).

maritime hammock: (A) low-canopied (25-30 ft) hammock with temperate overstory of live oak (*Quercus virginiana*), redbay, and cabbage palm (*Sabal palmetto*) and tropical understory of myrsine, nakedwood, marlberry (*Ardisia escallonioides*), and a plentiful growth of epiphytes on the branches of the oaks, including shoestring fern (*Vittaria lineata*), butterfly orchid (*Encyclia tampensis*), and wild pine (*Tillandsia utricularia*).

Rare species: loggerhead turtle (*Caretta caretta*) - no data but probably high density (Hopkins and Richardson, 1984).

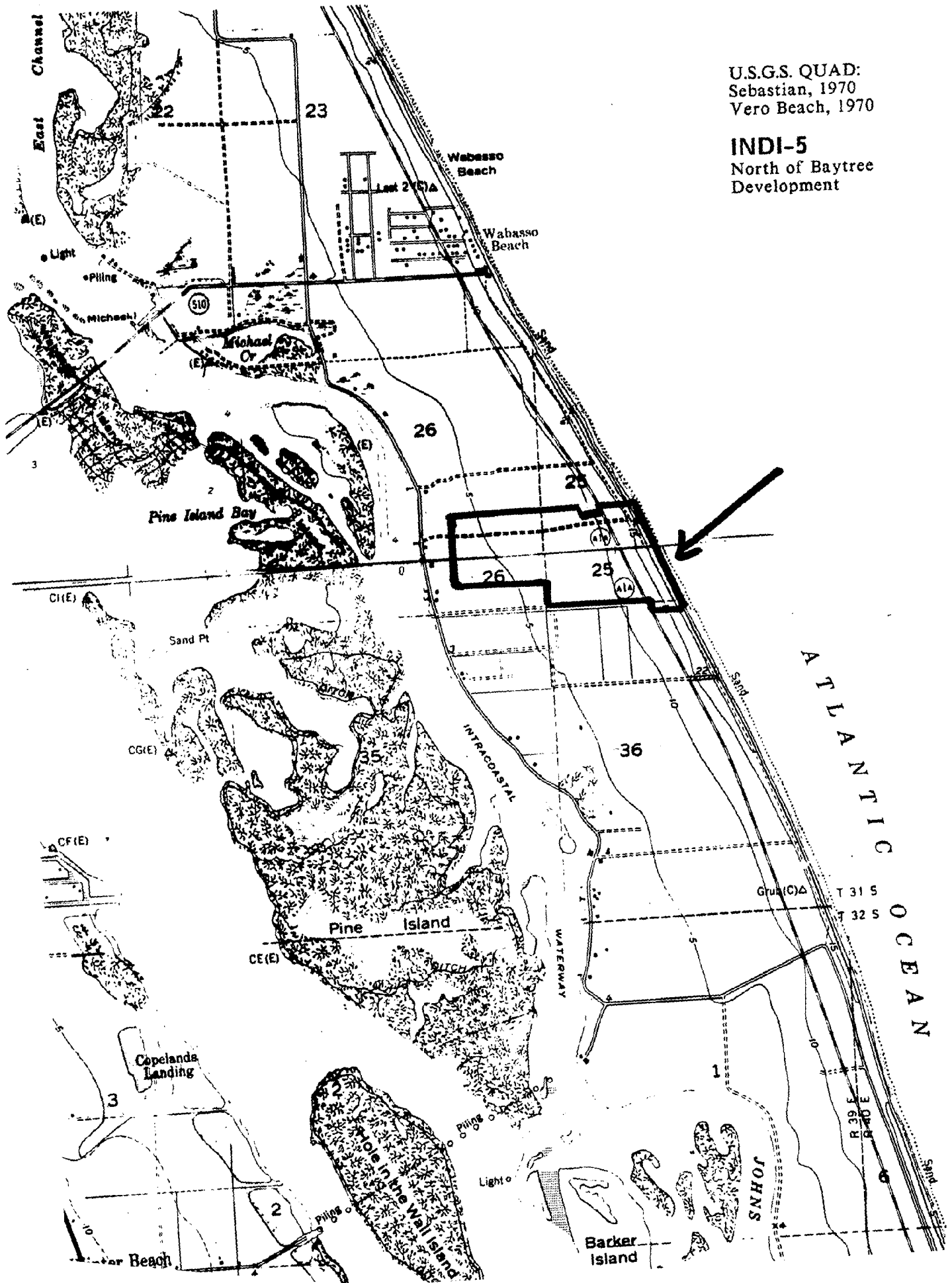
Disturbance: moderate invasion of strand and hammock by exotic Brazilian pepper (*Schinus terebinthifolius*). Fifteen parallel east-west survey lines cut through hammock. Strand area cut by several trails.

Surrounding land use: residential development to north and south (Baytree); citrus groves to south; mangroves to west.

Ownership: private: Robert A. Cairns, 407/649-8745; public: county (Seagrape trail beach access - 1/2 mile south of property) - no native vegetation.

U.S.G.S. QUAD:  
Sebastian, 1970  
Vero Beach, 1970

**INDI-5**  
North of Baytree  
Development



## Coastal Uplands Site Summary

### INDI-6

#### South End of Jungle Trail, Indian River County, Florida.

Approximate acreage: 176

Topographic map: Vero Beach

Florida D.O.T. aerial photograph: PD3621-16-12 (2/25/88)

Survey date: 19 February 1990 (F90JOH14)

**Physical setting:** ca 1-mile-wide barrier island with highest elevation (20 ft) nearest the Atlantic, sloping gradually to sea level at the lagoon. Many large mangrove islands offshore in the lagoon.

**Plant communities:** beach dune, coastal strand, maritime hammock.

**beach dune:** (A+) low dunes formed by clumps of sea oats (*Uniola paniculata*) and beach elder (*Iva imbricata*) in front of a scarp cut into saw palmetto zone. In places a dune covered by sea oats has obscured the scarp.

**coastal strand:** (A+) 50-yard-wide saw palmetto zone grades upward to cabbage palms and finally to a dense hedge of shrubs including nakedwood (*Myrcianthes fragrans*), redbay (*Persea borbonia*), buckthorn (*Bumelia tenax*), and wax myrtle (*Myrica cerifera*). Little sign of pepper (*Schinus terebinthifolius*) invasion.

**maritime hammock:** (A) similar to INDI-5

**Rare species:** loggerhead turtle (*Caretta caretta*) - no nesting data but presumed high nest density (Hopkins and Richardson, 1984); southeastern beach mouse (*Peromyscus polionotus niviventrus*)- 3 trapped near Turtle Trail beach access (Humphrey et al., 1987).

**Disturbance:** moderate invasion of exotic Brazilian pepper (*Schinus terebinthifolius*) along A1A.

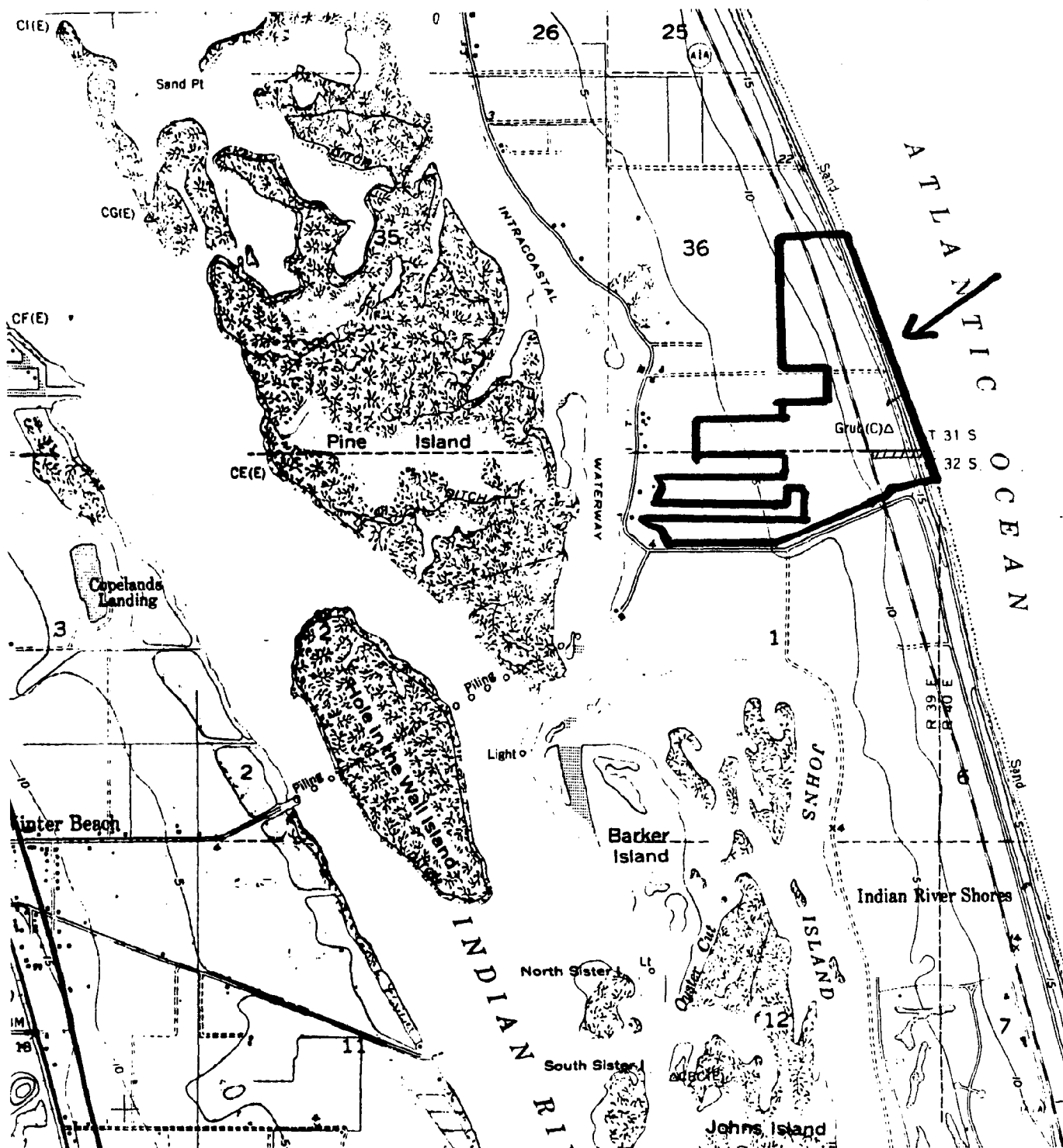
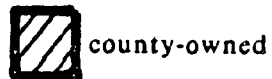
**Surrounding land use:** former citrus groves to west; residential development to north and southeast; golf course to southwest.

**Ownership:** public: county (Turtle Trail beach access) - no native vegetation. private: Mr. Robert A. Cairns, 92.6 acres, 1360 ft riverfront, 407/649-8745.

**References:**

U.S.G.S. QUAD:  
Vero Beach, 1970

**INDI-6**  
South End of  
Jungle Trail



## Coastal Uplands Site Summary

### INDI-7

#### Prang Island, Indian River, County, Florida.

Approximate acreage: 23

Topographic map: Indrio

Survey date: 20 February 1990 (F90JOH15)

Physical setting: low island surrounded by mangroves in Indian River lagoon

Plant communities: maritime hammock (this survey and Bowman, 1989)

maritime hammock: (A) hammock with both temperate and tropical trees in the overstory covers a long, narrow ridge on the east side of the island. Canopy trees include Virginia live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), mastic (*Mastichodendron foetidissimum*), strangler fig (*Ficus aurea*), inkwood (*Exothea paniculata*), blolly (*Guapira discolor*), and gumbo limbo (*Bursera simarouba*). Understory dominated by three species of stoppers (*Eugenia foetida*, *Eugenia axillaris*, *Myrcianthes fragrans*).

#### Rare species:

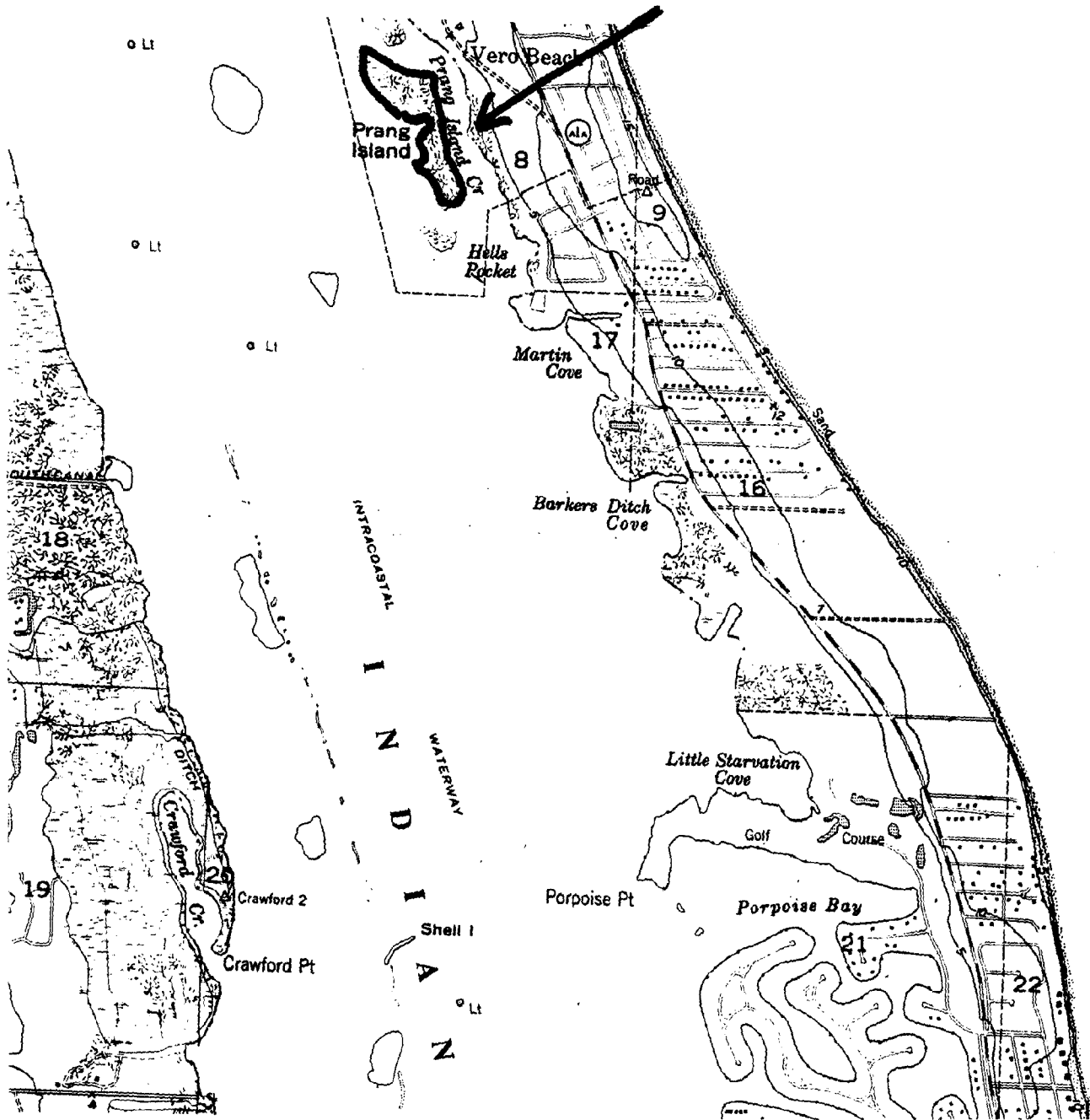
Disturbance: Australian pine (*Casuarina equisetifolia*) has invaded the spoil placed on the north end of the island and Brazilian pepper (*Schinus terebinthifolius*) has invaded the upper mangrove fringe. These species were killed back by the freeze of December 1989, but the pepper was germinating abundantly at the time of the survey. In one portion of the hammock the ground was blanketed by the night-blooming cereus (*Hylocereus indatus*), indicating perhaps the location of a house.

Surrounding land use: Indian River Aquatic Preserve - seagrass beds found off north end of Island (Gurr, et al., 1990).

Ownership: private: Idlewyld Corporation, 1201 Poitras Drive, Vero Beach, FL 32963. (There is a legal question as to whether this island should have been removed from the Indian River Aquatic Preserve.)

U.S.G.S. QUAD:  
Indrio, 1983

**INDI-7**  
Prang Island



## Coastal Uplands Site Summary

### INDI-8

#### South of Round Island County Park, Indian River County, Florida.

Approximate acreage: 105

Topographic map: Indrio

Florida D.O.T. aerial photograph : PD3621-18-02 (2/25/88)

Survey date: 20 February 1990 (F90JOH49)

Physical setting: low (15-ft) barrier adjacent to broader mangrove stands. Southern portion adjoins northern portion of STLU-1 (Avalon) across county line.

Plant communities: beach dune, coastal strand, maritime hammock

beach dune: (A) low sea oats (*Uniola paniculata*) dune fronting saw palmetto (*Serenoa repens*) strand. Associated species include railroad vine (*Ipomoea pes-caprae*), sea rocket (*Cakile lanceolata*), and beach sunflower (*Helianthus debilis*).

coastal strand: (B) substantial invasion by Brazilian pepper (*Schinus terebinthifolius*) into mixed shrub stand with live oak (*Quercus virginiana*), redbay (*Persea borbonia*), hercules' club (*Zanthoxylum clava-herculis*), and cabbage palm (*Sabal palmetto*), grading to saw palmetto and sea grape (*Coccoloba uvifera*) on seaward side.

maritime hammock: (A) dense, short-canopied (20') forest with overstory of temperate live oak, hercules' club, and redbay and a smattering of tropical trees in canopy including gumbo limbo (*Bursera simarouba*) and strangler fig (*Ficus aurea*). Understory of marlberry (*Ardisia escallonioides*), myrsine (*Rapanea punctata*), buckthorn (*Bumelia tenax*), and Florida privet (*Forestiera segregata*).

Rare species: manatee (*Trichechus manatus*) - observed in boat launch area on lagoon side of park, known to congregate in this area (Cairns, 1990, pers. comm.)

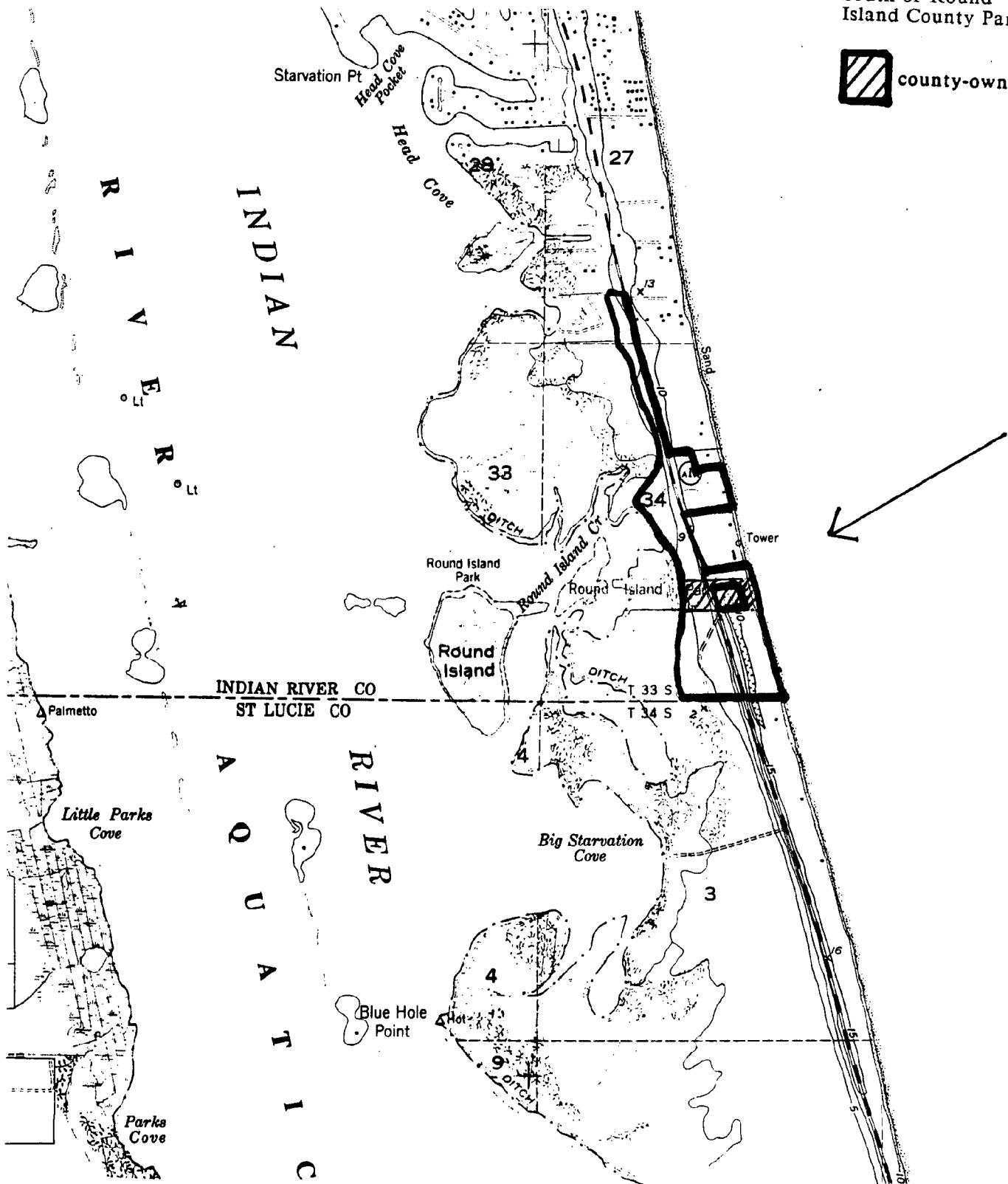
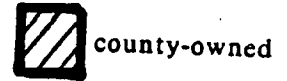
Disturbance: strand and undertory of hammock cleared in county park; mangroves killed in some areas by ditching and diking for mosquitoes; Australian pine (*Casuarina equisetifolia*) planted as windbreaks along roads; Brazilian pepper has invaded strand and hammock from disturbed roadside along A1A.

Surrounding land use: county park (boat launch) and residential.

Ownership: public: county (Round Island Park); private: remainder.

U.S.G.S. QUAD:  
Indrio, 1983

**INDI-8**  
South of Round  
Island County Park



## Coastal Uplands Site Summary

### STLU-1

#### Avalon, St. Lucie County, Florida.

Approximate acreage: 407

Topographic map: Indrio

Florida D.O.T. aerial photograph: PD3442-11-23 (4/11/86)

Survey date: 19 April and 6 December 1990 (F90JOH54)

**Physical setting:** broader (1 mile wide) portion of barrier island, composed of a series of alternating ridges and swales similar to areas on the north side of present-day inlets.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) (Burch & Posin, 1983, F83BUR05 and this survey) - low dune dominated by beach cordgrass (*Spartina patens*) and sea oats (*Uniola paniculata*). Other common species are railroad vine (*Ipomoea pes-caprae*), beach elder (*Iva imbricata*), alternanthera (*Alternanthera maritima*), and coastal vervain (*Glandularia maritima*). Presently the north end is eroded with Australian pines (*Casuarina equisetifolia*) toppled into the surf.

**coastal strand:** (B) (Burch & Posin, 1983, F83BUR05 and this survey) - heavily invaded by the exotic Brazilian pepper (*Schinus terebinthifolius*) and Australian pine in several places. Native dominants are saw palmetto (*Serenoa repens*) and sea grape (*Coccoloba uvifera*). Shrub stand is patchy, alternating with grassy areas dominated by beach cordgrass. Hercules' club (*Zanthoxylum clava-herculis*), myrsine (*Rapanea punctata*) and buckthorn (*Bumelia tenax*), both regular and "lacuum" type, increase towards A1A in northern, non-public portion.

**maritime hammock:** (A) (Burch & Posin, 1983, F83BUR05 and this survey) - occupies a series of NE-SW running ridges alternating with lower areas of mangrove or cabbage palm (*Sabal palmetto*) forest. Canopy composed of large spreading virginia live oaks (*Quercus virginiana*) and redbays (*Persea borbonia*) with a tropical understory of spanish stopper (*Eugenia foetida*), marlberry (*Ardisia escallonioides*), myrsine (*Rapanea punctata*), and nakedwood (*Myrcianthes fragrans*). This is one of the southernmost locations for nakedwood. Large specimens of Brazilian pepper (*Schinus terebinthifolius*) are also present in the understory. Epiphytes including butterfly orchid (*Encyclia tampensis*), shoestring fern (*Vittaria lineata*) and wild pines (*Tillandsia recurvata*, *T. usneoides*, *T. fasciculata*) are common on the branches of the oaks.

**Rare species:** sand-dune spurge (*Chamaesyce cumulicola*) - specimen collected by Baetzele (#10564) in 1978 and deposited at University of Florida herbarium; coastal vervain (*Glandularia maritima*) - common in beach dune area (Burch & Posin, 1983, F83BUR05); gopher tortoise (*Gopherus polyphemus*) - 2 burrows seen in strand area (Burch & Posin, 1983, F83BUR05).

**Disturbance:** portions of strand (east of A1A) heavily invaded by exotic species (including Castor bean); roads and trails through hammock; mangrove fringes ditched and diked for mosquito control.

**Surrounding land use:** natural to north (INDI-8); housing to south.

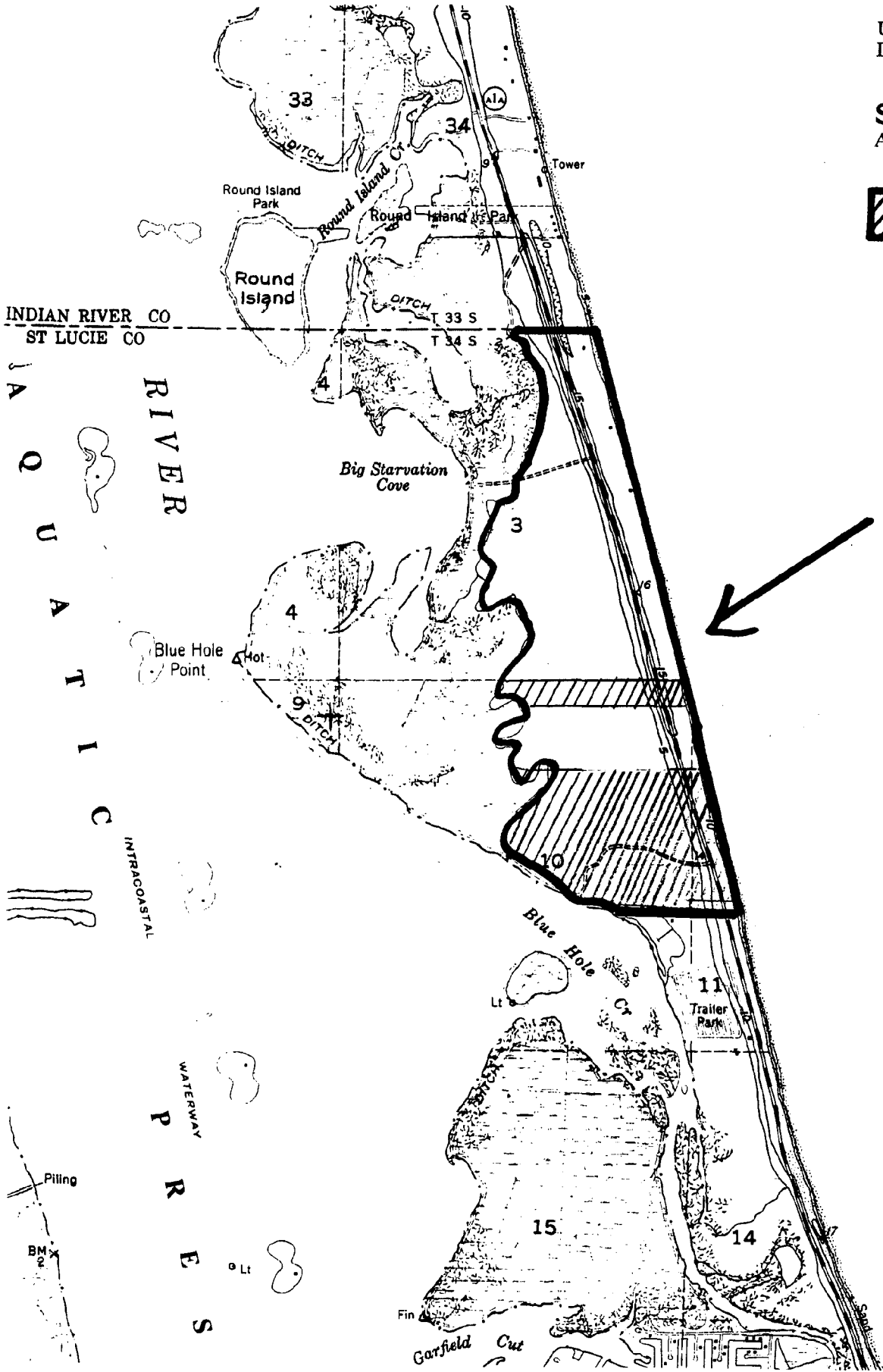
**Ownership:** public: state owns southern third of the tract and a narrow strip south of the section line through the center as undeveloped park (Avalon State Recreation Area;

## Coastal Uplands Site Summary

Save-Our-Coast Annual Report, 1990); private: northern two-thirds in private ownership.

U.S.G.S. QUAD:  
Indrio, 1983

STLU-1  
Avalon



## Coastal Uplands Site Summary

### STLU-2

#### Fish House Cove, St. Lucie County, Florida.

Approximate acreage: 11

Topographic map: Indrio

Florida D.O.T. aerial photograph: PD3442 -12-20 (4/11/86)

Survey date: 19 April 1990 (F90JOH53)

Physical setting: ca 1/2-mile long, narrow (20 yard-wide), N-S running ridge among a stand of mangroves, accessible from mosquito ditch berm (gated road).

Plant communities: maritime hammock

**maritime hammock:** (this survey and Brooks, 1983) - (A) short canopy of exclusively tropical species, little damaged by the freeze of December 1989. Principal trees are black ironwood (*Krugiodendron ferreum*), inkwood (*Exothea paniculata*), gumbo limbo (*Bursera simarouba*), pigeon plum (*Coccoloba diversifolia*), blolly (*Guapira discolor*), Jamaica caper (*Capparis cyanophallophora*), and Florida privet (*Forestiera segregata*). There is little distinction in height between canopy and understory trees.

Rare species: golden leather fern (*Acrostichum aureum*; Brooks, 1983).

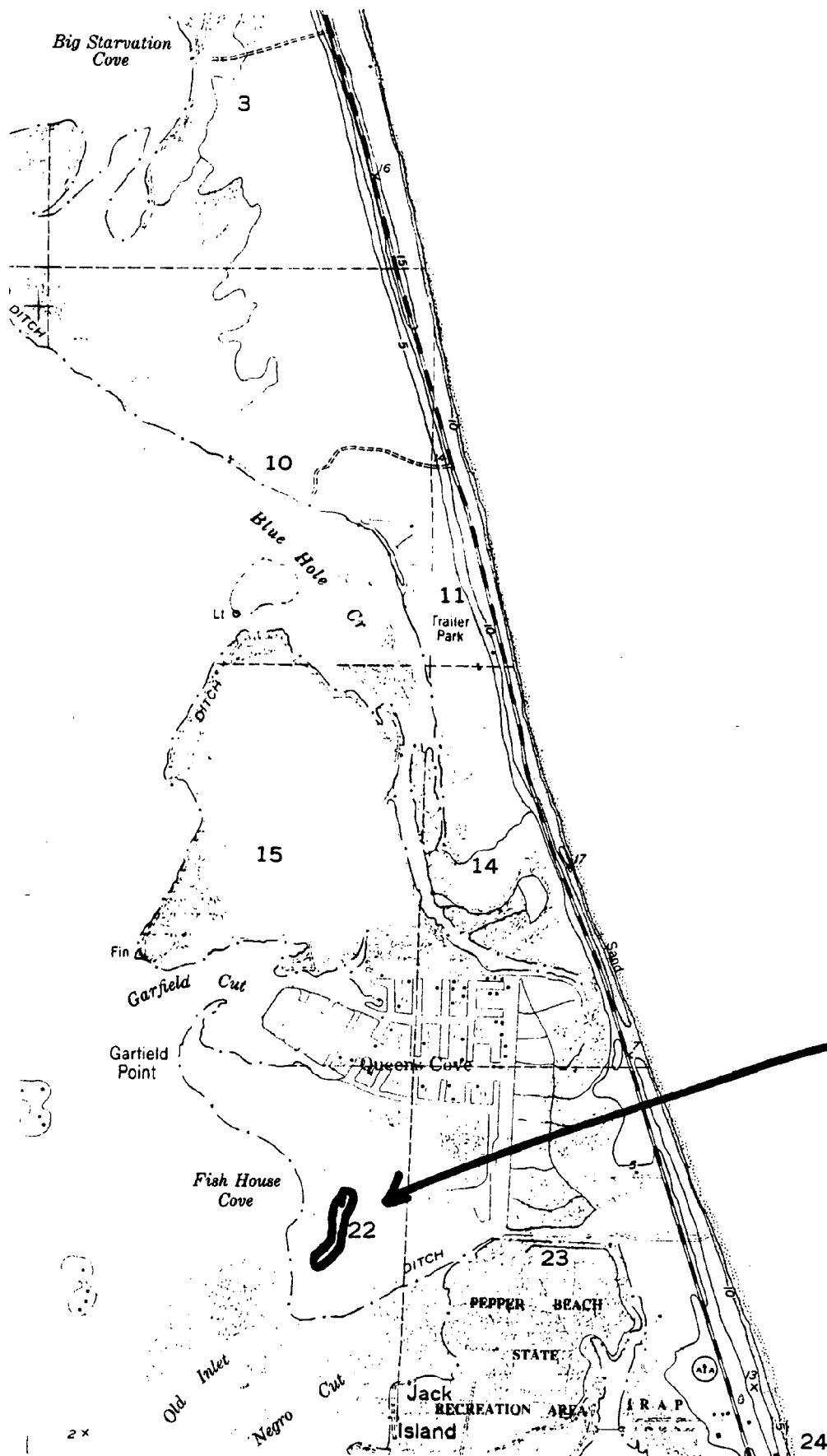
Disturbance: ditching of mangroves has permitted invasion of exotic Brazilian pepper (*Schinus terebinthifolius*) on edges.

Surrounding land use: development north, east, and south.

Ownership: private

U.S.G.S. QUAD:  
Indrio, 1983

**STLU-2**  
Fish House Cove



## Coastal Uplands Site Summary

### STLU-3

#### Ft. Pierce Inlet State Recreation Area, St. Lucie County, Florida.

Approximate acreage: 38

Topographic map: Ft. Pierce

Florida D.O.T. aerial photograph: PD3442-12-18 (F90JOH52)

Survey date: 19 April 1990

Physical setting: prograding beach on north (updrift) side of jettied inlet; broad mangrove areas on lagoon side with small upland portions in maritime hammock.

Plant communities: beach dune, coastal strand, maritime hammock

beach dune: (A) broad prograding beach with seaward vegetation line composed of scattered hillocks of bitter panicum (*Panicum amarum* var *amarulum*) fronting a plain of camphorweed (*Heterotheca subaxillaris*), stinging nettle (*Cnidioscolus stimulosus*), and sea oats (*Uniola paniculata*).

coastal strand: (C) strand at northeast end of beach parking lot disturbed and invaded by the exotic Brazilian pepper (*Schinus terebinthifolius*). Otherwise consists of scattered patches of sea grape (*Coccoloba uvifera*) and cabbage palms (*Sabal palmetto*) alternating with saw palmetto (*Serenoa repens*).

maritime hammock: (A) hammock is found west of the beach parking area and on Boot Toe point on the lagoon side of the park. At the latter site is a short forest on berm bordered by mangroves with large diameter trees of live oak (*Quercus virginiana*), redbay (*Persea borbonia*), and pignut hickory (*Carya glabra*) in the canopy and tropical wild coffee (*Pycnотria nervosa*) and spanish stopper (*Eugenia foetida*) in the understory. The tropical species were killed back by the freeze of December 1989. The parking lot site (nature trail) also had large diameter oaks and redbay with strangler fig (*Ficus aurea*) and a temperate understory of saw palmetto, beautyberry (*Callicarpa americana*) and coralbean (*Erythrina herbacea*).

Rare species: following species reported by Brooks (1986): coastal vervain (*Glandularia maritima*), necklace pod (*Sophora tomentosa*), broad-leaved spider lily (*Hymenocallis latifolia*); loggerhead turtle (*Caretta caretta*) - no data but nesting densities over 100/km to north and south of area (Hopkins and Richardson, 1984); gopher tortoise (*Gopherus polyphemus*) - active burrows in old field west of entrance station (Roberts, R.E., 1983, pers. comm.)

Disturbance: the mangrove fringe has been ditched and diked for mosquito control; building of the parking lot behind the beach displaced the transition zone strand the strand allowing invasion of the exotic Brazilian pepper and exposing trees on the edges of the maritime hammock to salt spray damage.

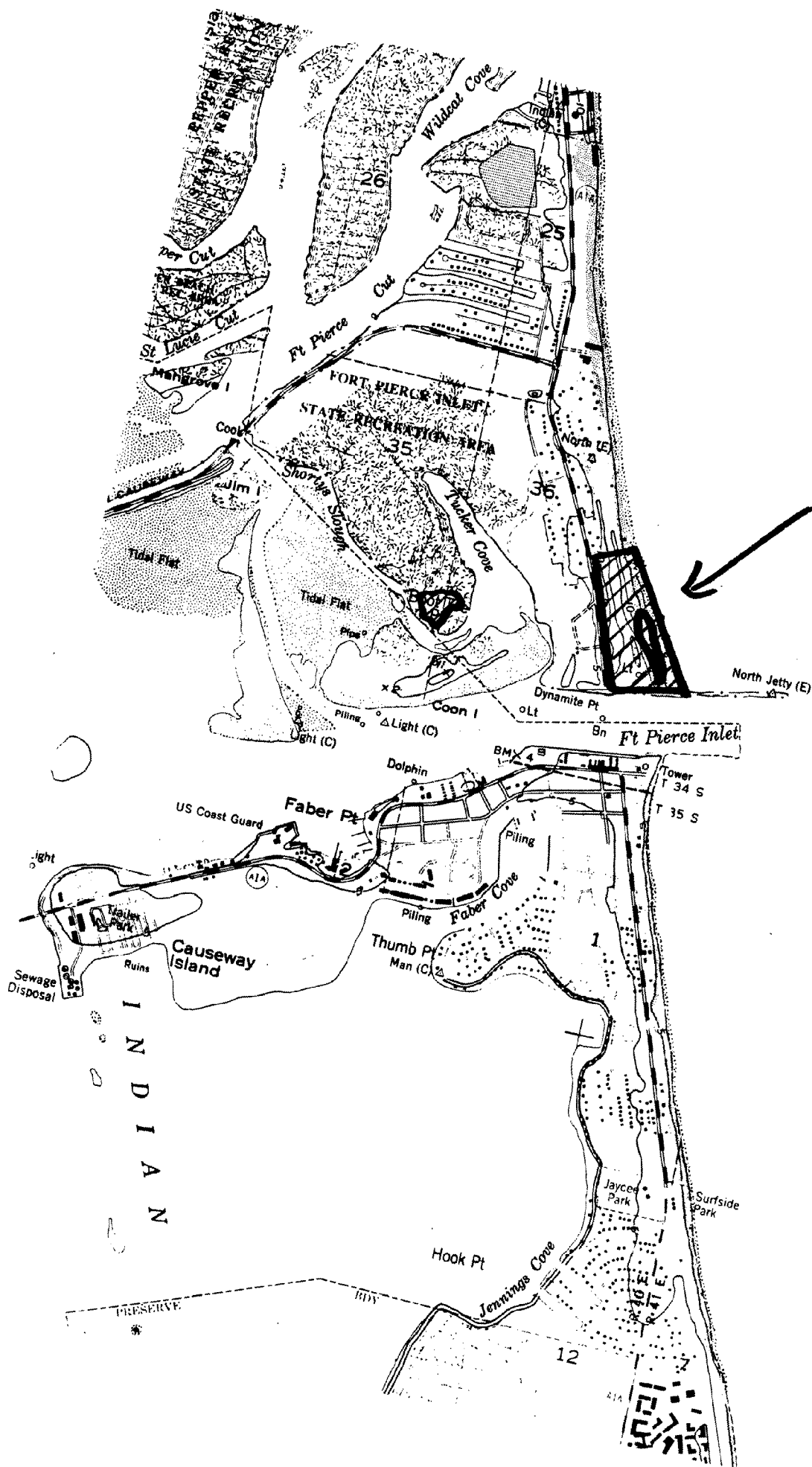
Surrounding land use: residential to north; inlet to south.

Ownership: public: state

U.S.G.S. QUAD:  
Ft. Pierce, 1970

**STLU-3**  
Ft. Pierce Inlet  
State Recreation  
Area

 state-owned



## Coastal Uplands Site Summary

### STLU-4

#### South of Blue Heron Boulevard, St. Lucie County, Florida.

Approximate acreage: 17

Topographic map: Fort Pierce

Florida D.O.T. aerial photograph: PD3442-13-10 (4/11/86)

Survey date: 20 April and 6 December 1990 (F90JOH60)

**Physical setting:** area mostly mangroves with a narrow east-west running strip of higher land with hammock running inland from the beach at north end and a beach ridge along coast to south abutting directly on mangroves. Native coastal strand is replaced entirely by Australian pine (*Casuarina equisetifolia*).

**Plant communities:** beach dune, maritime hammock

**beach dune:** (A) pioneer beach grasses colonizing backdune area where Australian pines have been removed (Brooks and Mook, 1989). Good diversity and vigorous growth.

**maritime hammock:** (B) mixed temperate/tropical canopy with large diameter redbay (*Persea borbonia*), gumbo limbo (*Bursera simarouba*), strangler fig (*Ficus aurea*) and laurel oak (*Quercus laurifolia*). Marlberry (*Ardisia escallonioides*) and pidgeon plum (*Coccoloba diversifolia*) predominate in the understory along with large trees of the exotic Brazilian pepper (*Schinus terebinthifolius*). Heavy growth of grape vines (*Vitis munsoniana*) on trees along road edge.

**Rare species:** beach star (*Remirea maritima*; Brooks and Mook, 1989); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

**Disturbance:** some invasion of exotic Brazilian pepper along road edge.

**Surrounding land use:** mangroves in state park to south; residential development to north.

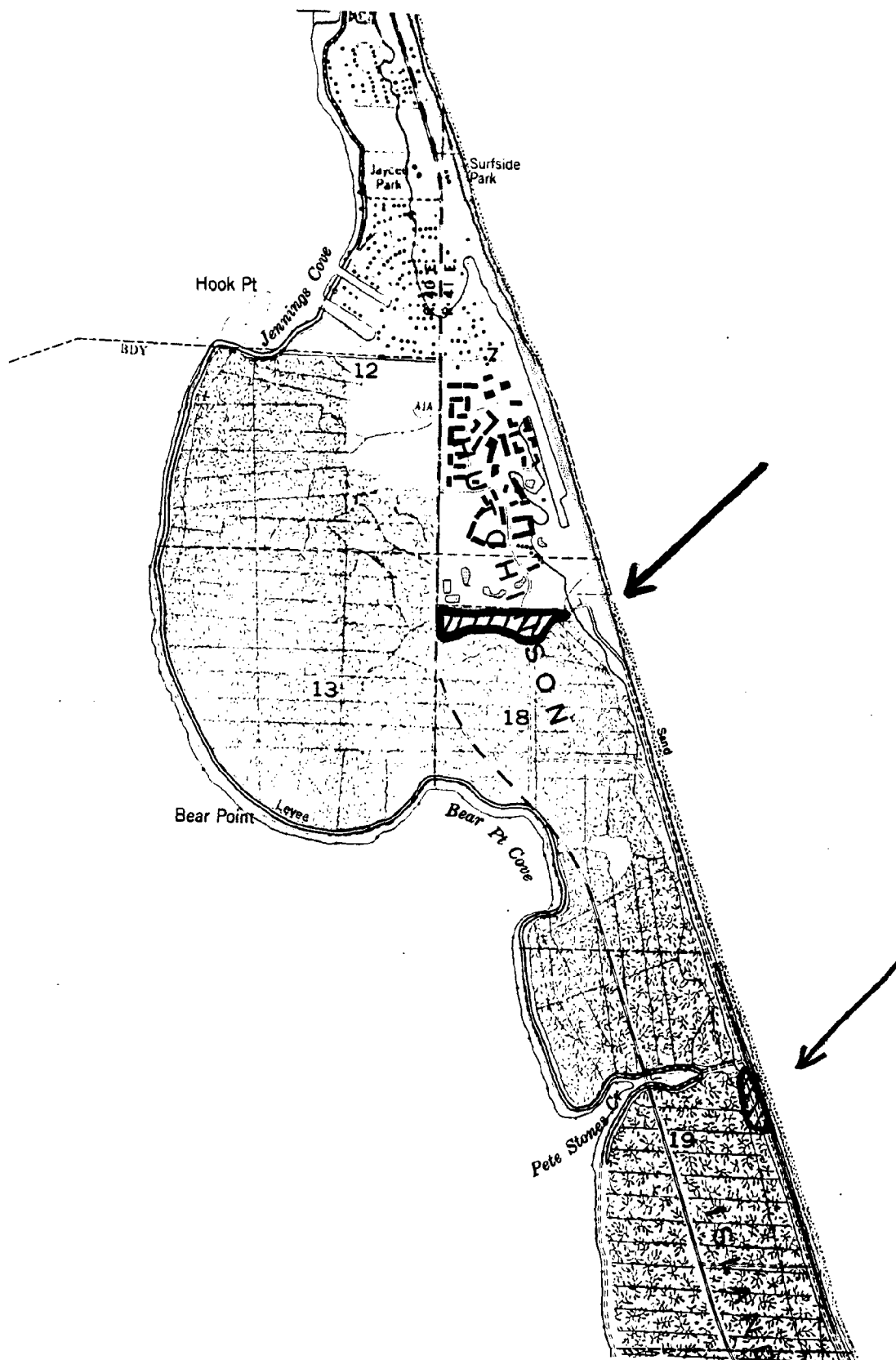
**Ownership:** public: state - John Brooks State Park (undeveloped; Munshaw, 1990).

U.S.G.S. QUAD:  
Fort Pierce, 1983

**STLU-4**  
South of  
Blue Heron  
Boulevard



state-owned



## Coastal Uplands Site Summary

### STLU-5

#### Blind Creek Beach, St. Lucie County, Florida.

Approximate acreage: 11

Topographic map: Eden

Florida D.O.T. aerial photograph: PD3442-13-10 (4/11/86)

Survey date: 20 April 1990 (F90JOH59)

**Physical setting:** beach is at the head of a tidal creek through the mangroves and hammock borders its northern shore. Surrounding uplands are all in Australian pine (*Casuarina equisetifolia*). Australian pine stumps in swash zone are evidence of recent severe erosion.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (C) beach vegetation forms a low narrow zone in front of a tall stand of solid Australian pine. It consists of scattered patches of sea grape (*Coccoloba uvifera*), bay cedar (*Suriana maritima*), and alternanthera (*Alternanthera maritima*). The sea grape and bay cedar were killed back by the freeze of December 1989. The bay cedar showed no sign of recovery from the freeze kill.

**coastal strand:** (Burch & Posin, 1983, F83BUR07) - (C) stretch extending 4.5 miles north of Big Mud Creek was examined in 1983 and found to be almost exclusively Australian pine (*Casuarina equisetifolia*) with only 25% cover by native species primarily sea grape, marlberry (*Ardisia escallonioides*), saw palmetto (*Serenoa repens*), and coralbean (*Erythrina herbacea*).

**maritime hammock:** (A) Forest on narrow berm north of Blind Creek. Canopy dominated by cabbage palm (*Sabal palmetto*) with mulberry (*Morus rubra*), hackberry (*Celtis laevigata*), and large diameter redbay (*Persea borbonia*) also present. Understory primarily pigeon plum (*Coccoloba diversifolia*) and marlberry (*Ardisia escallonioides*).

**Rare species:** coastal vervain (*Glandularia maritima*) - several flowering plants seen along path to hammock; burrowing four-o'clock (*Okenia hypogaea*) - several plants seen at Middle Cove Beach Access (Burch & Posin, 1983, F83BUR07); beach star (*Remirea maritima*; Burch & Posin, 1983, F83BUR07); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

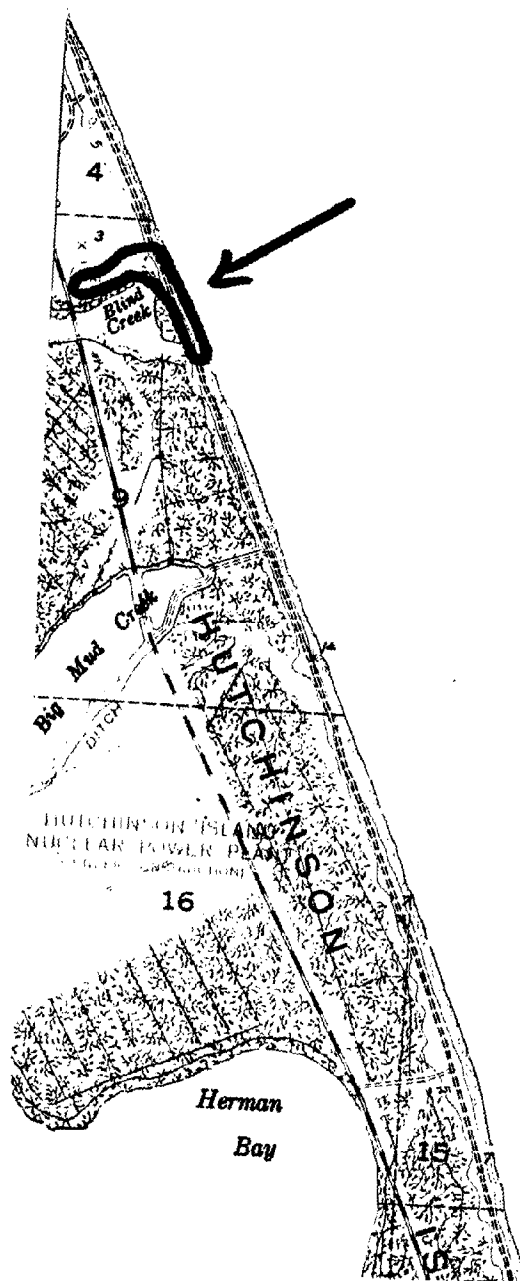
**Disturbance:** Extensive invasion of exotic Australian pine forming pure stands throughout this area would indicate severe disturbance historically, possibly from the building of A1A. Much of the Australian pine has been killed back by the freeze of December 1989.

**Surrounding land use:** Australian pine stands to north and south; mangroves to west.

**Ownership:** private: Florida Power and Light property line bisects long axis of Blind Creek (utility provides public beach access and parking). Remainder (hammock area) in other private ownership.

U.S.G.S. QUAD:  
Eden, 1970

**STLU-5**  
Blind Creek Beach



## Coastal Uplands Site Summary

### STLU-6

#### Florida Power and Light Nuclear Plant, St. Lucie County, Florida.

Approximate acreage: 11

Topographic map: Eden

Florida D.O.T. aerial photograph: PD3442-14-06 (4/11/86)

Survey date: 20 April 1990 (F90JOH58)

Physical setting: small NW-SE running strip of upland hammock bordering a tidal creek north of FP&L holding pond east of A1A.

Plant communities: beach dune, coastal strand, maritime hammock

beach dune and coastal strand: (Burch and Posin, 1983, F83BUR07) (C) 4 miles of beach immediately north of this area were surveyed. Erosion had eaten back to the strand zone in which the native vegetation had been almost entirely displaced by a dense stand of Australian pine (*Casuarina equisetifolia*). This beach had an usually high density of bay cedar (*Suriana maritima*) in 1983, which appeared to have been completely killed by the freeze of December 1989.

maritime hammock: (A+) diverse stand composed of predominantly tropical tree species in the canopy, principally mastic (*Mastichodendron foetidissimum*), strangler fig (*Ficus aurea*), and pigeon plum (*Coccoloba diversifolia*). Some canopy trees such as poisonwood (*Metopium toxiferum*), paradise tree (*Simarouba glauca*), and pigeon plum were killed back by the freeze of December 1989, but most tropical understory trees and shrubs such as marlberry (*Ardisia escallonioides*), white indigoberry (*Randia aculeata*), and wild lime (*Zanthoxylum fagara*) were unaffected.

Rare species: species seen by Burch and Posin (1983, F83BUR07) to north of area: burrowing four o'clock (*Okenia hypogaea*), beach star (*Remirea maritima*); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

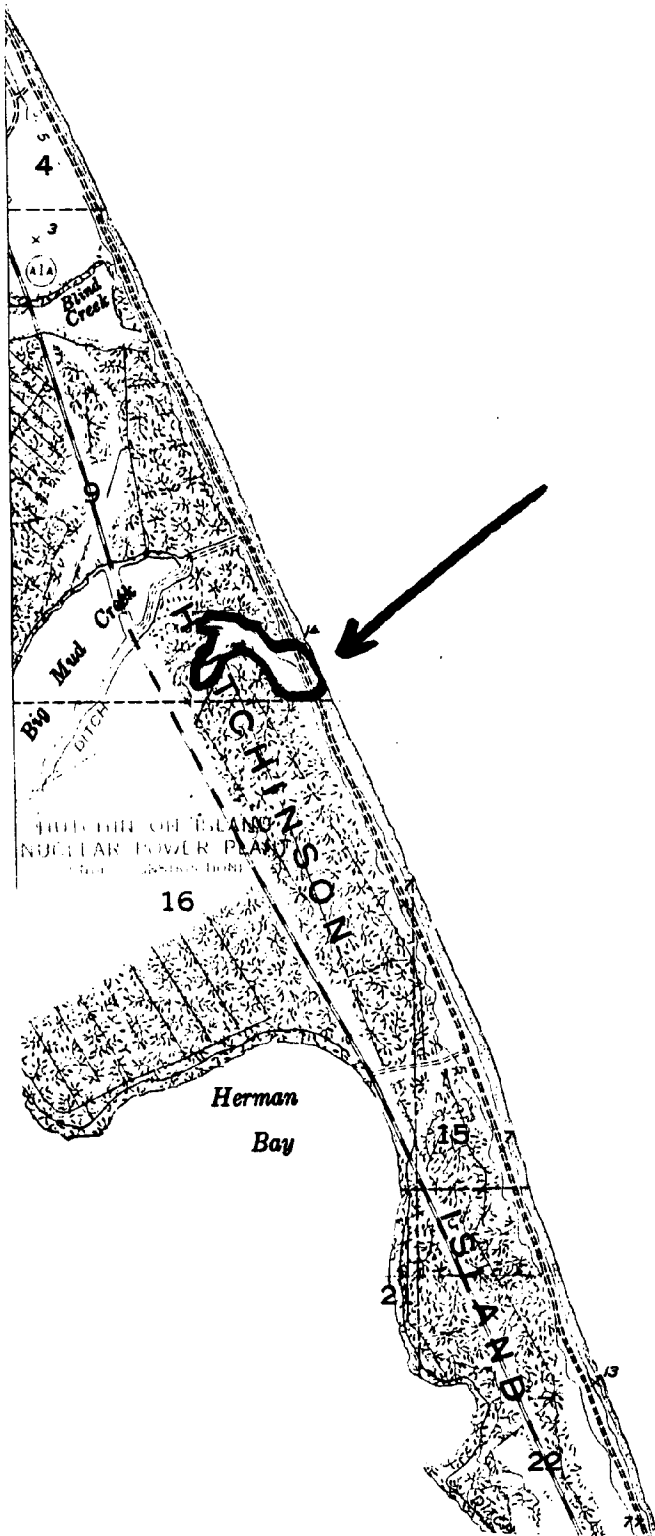
Disturbance: area behind beach bordered by open stand of exotic Australian pines (*Casuarina equisetifolia*), which with Brazilian pepper is also scattered through the hammock. Due to the open understory of the Australian pine stand behind the beach, salt spray can reach hammock edges causing salt burn to foliage of hammock trees on the seaward edge.

Surrounding land use: nuclear power plant to south and west; mangrove stand to north.

Ownership: private: Florida Power and Light (beach access closed to public).

U.S.G.S. QUAD:  
Eden, 1970

**STLU-6**  
Florida Power and  
Light Nuclear Plant



## Coastal Uplands Site Summary

### STLU-7

#### Walton Rocks Beach Access, St. Lucie County, Florida.

Approximate acreage: 22

Topographic map: Eden

Florida D.O.T. aerial photograph: PD3442-14-06 (4/11/86)

Survey date: 20 April 1990 (F90JOH57)

**Physical setting:** narrow portion of barrier with most of width made up of mangroves with uplands comprising only a 200-ft-wide strip along the Atlantic shore.

**Plant communities:** beach dune, coastal strand

**beach dune:** (C) narrow fringe of sea oats (*Uniola paniculata*) and beach elder (*Iva imbricata*) with scattered sea grape (*Coccoloba uvifera*) and spanish bayonet (*Yucca aloifolia*) backed by a solid stand of Australian pine (*Casuarina equisetifolia*). To the south beach sand is spilling directly into the stand of Australian pine.

**coastal strand:** (B) pure stand of saw palmetto (*Serenoa repens*) behind the beach dune where Australian pines are absent. Woodbury's long species list suggests the area had a diverse native flora displaced by the Australian pines.

**Rare species:** coastal vervain (*Glandularia maritima*; Woodbury, 1986); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

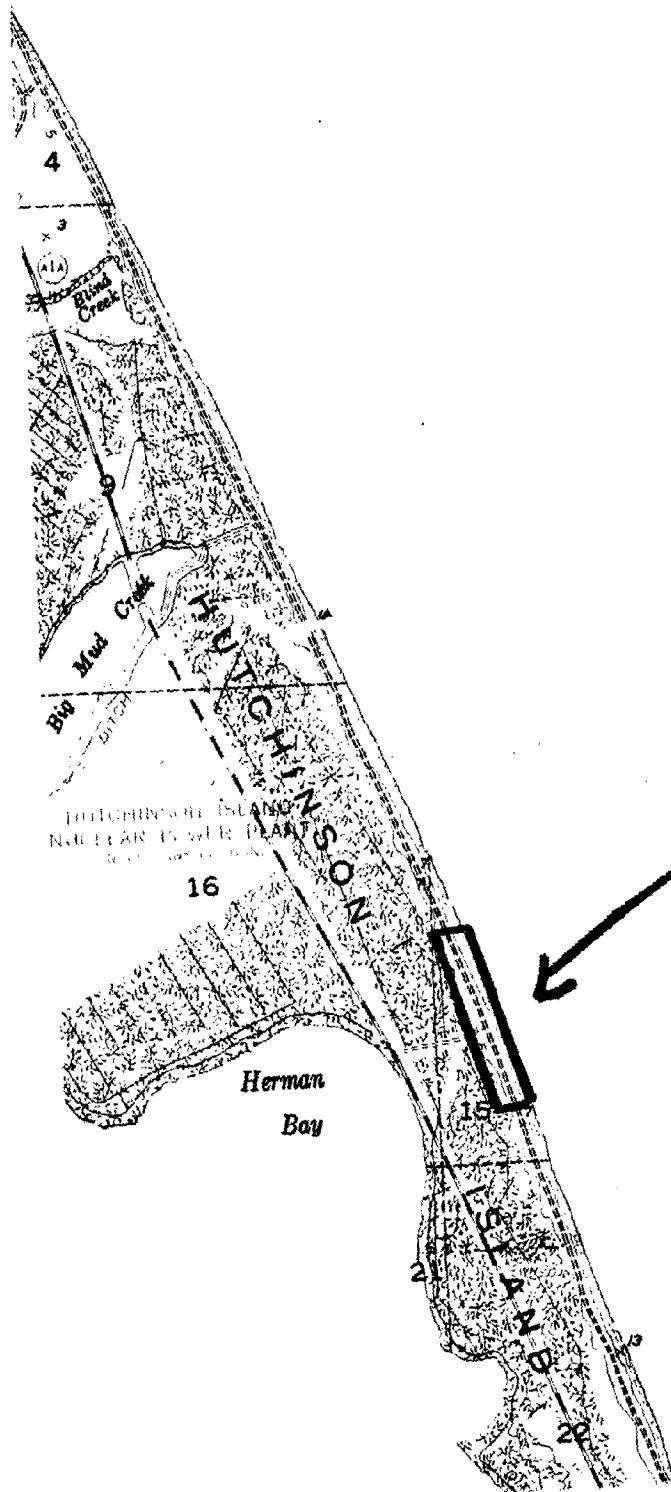
**Disturbance:** heavy invasion of the exotic Australian pine (*Casuarina equisetifolia*) indicates past disturbance.

**Surrounding land use:** nuclear power plant to north; mangroves to west; housing development to south.

**Ownership: private:** Florida Power and Light (public beach access).

U.S.G.S. QUAD:  
Eden, 1970

**STLU-7**  
Walton Rocks Beach  
Access



## Coastal Uplands Site Summary

### STLU-8

#### Herman's Bay Beach Access to Normandy Beach Access, St. Lucie County, Florida.

Approximate acreage: 143

Topographic map: Eden

Florida D.O.T. aerial photographs: PD3442-14-04 and 14-06 (4/11/86)

Survey date: 20 April 1990 (F90JOH55 & F90JOH56); 6 December 1990

Physical setting: one of the broader portions of Hutchinson Island in terms of uplands - reaching almost 1000 feet in width and making up most of the barrier island.

Plant communities: beach dune, coastal strand, maritime hammock

**beach dune:** (Burch and Posin, 1983, F83BUR08) - (A) low narrow ledge of sea oats (*Uniola paniculata*) interrupted by stretches of strand vegetation (sea grape or saw palmetto) above beach. Other prominent species include beach sunflower (*Helianthus debilis*), beach elder (*Iva imbricata*), and seashore paspalum (*Paspalum distichum*).

**coastal strand:** (Burch and Posin, 1983, F83BUR08 and this survey) - (A+) sea grape and saw palmetto alternately dominant; spanish bayonet (*Yucca aloifolia*) common at interface with beach dune. Tropical species at Normandy beach access including spanish stopper (*Eugenia foetida*), blolly (*Guapira discolor*), gumbo limbo (*Bursera simarouba*), and wild lime (*Zanthoxylum fagara*).

**maritime hammock:** (A) at north end of area, west of A1A, survey lines at regular intervals cut through a dense zone of Brazilian pepper (*Schinus terebinthifolius*) along the road, dip into a "trough" with black and red mangroves, and climb a low ridge with maritime hammock dominated by very large trees of Virginia live oak (*Quercus virginiana*), redbay (*Persea borbonia*), and gumbo limbo (*Bursera simarouba*). Understory is sparse, consisting of scattered saw palmetto (*Serenoa repens*), white stopper (*Eugenia axillaris*), and indigoberry (*Randia aculeata*). At south end of area, west of A1A, is a small area of hammock dominated by tropical trees little damaged by the freeze of December 1989. Large specimens of gumbo limbo, strangler fig (*Ficus aurea*), paradise tree (*Simarouba glauca*) are prominent with a tropical understory of spanish stopper and pigeon plum (*Coccoloba diversifolia*). East of A1A, the hammock is shorter and more open with sea grape (*Coccoloba uvifera*), strangler fig (*Ficus aurea*), and cabbage palm (*Sabal palmetto*) the most common trees. Scattered Australian pines (*Casuarina equisetifolia*) and Brazilian pepper have invaded in disturbed areas. Understory is composed of marlberry (*Ardisia escallonioides*), spanish stopper, and wild lime. Hercules' club (*Zanthoxylum clava-herculis*) is prominent at the south end of the area, east of A1A.

**Rare species:** coastal vervain (*Glandularia maritima*) - occasional plants in strand zone (Burch and Posin, 1983, F83BUR08); sea lavender (*Tournefortia gnaphalodes*) - 2 sites at the strand/beach interface, one with one plant and one with ca 20 plants (Burch & Posin, 1983, F83BUR08); burrowing four o'clock (*Okenia hypogaea*) - 6 plants in stretch of beach from 1/2 to 1 mile south of Herman Bay beach access (Burch & Posin, 1983, F83BUR08); necklace pod (*Sophora tomentosa*) - in saw palmetto zone about 300 yds north and south of Herman Bay beach access (Burch & Posin, 1983, F83BUR08); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

## Coastal Uplands Site Summary

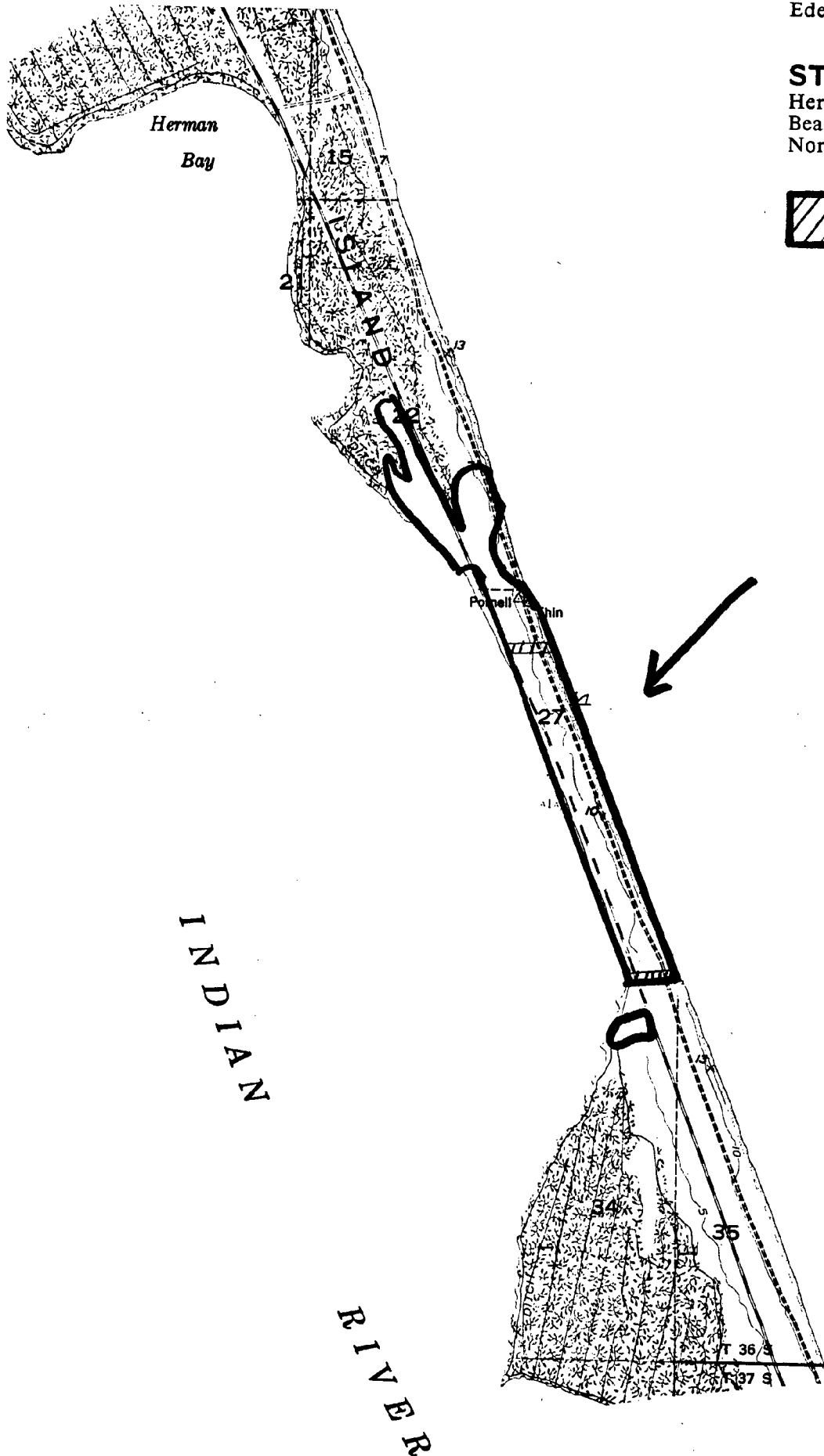
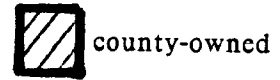
**Disturbance:** disturbed borders of A1A with heavy invasion of Australian pine (*Casuarina equisetifolia*) and Brazilian pepper (*Schinus terebinthifolius*).

**Surrounding land use:** fire station and residential development to north; residential and golf course to south.

**Ownership:** private: Hutchinson Island Association Ltd., 11180 Southwest 107th St. Suite 102, Miami (in part); public: county - two beach access sites (Herman's Bay and Normandy) totalling approximately 2 acres.

U.S.G.S. QUAD:  
Eden, 1970

**STLU-8**  
Herman's Bay  
Beach Access to  
Normandy Beach Access



## Coastal Uplands Site Survey

### STLU-9

#### Dollman tract, St. Lucie County, Florida.

Approximate acreage: 88

Topographic map: Eden

Florida D.O.T. aerial photograph: PD3442-14-04 (4/11/86)

Survey date: 18 and 20 April and 5 Dec 1990 (F90JOH51)

**Physical setting:** portion of barrier island where coastal upland broadens to about 1000 feet, with NE-SW trending upland ridges in mangrove zone to west.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) narrow patchy strip of grasses on low dune above beach, consisting primarily of beach cordgrass (*Spartina patens*) and sea oats (*Uniola paniculata*) plus beach elder (*Iva imbricata*), spanish bayonet (*Yucca aloifolia*), and shrubby sea grape (*Coccoloba uvifera*). Stumps of Australian pine (*Casuarina equisetifolia*) in the swash zone indicate previous erosion.

**coastal strand:** (A+) solid stand of saw palmetto behind foredune grades upward to coastal shrubs inland including myrsine (*Rapanea punctata*), dwarfed redbay (*Persea borbonia*), and live oak (*Quercus virginiana*).

**maritime hammock:** (A) canopy dominated by live oak, redbay, and clumps of cabbage palms (*Sabal palmetto*), with hercules'club (*Zanthoxylum clava-herculis*), beautyberry (*Callicarpa americana*), and wax myrtle (*Myrica cerifera*) in understory. Tropical portion near bayshore has large gumbo limbos (*Bursera simarouba*) with poisonwood (*Metopium toxiferum*) and paradise tree (*Simarouba glauca*) in the canopy and gulf graytwig frequent (*Schoepfia chrysophylloides*) in the understory.

**Rare species:** Florida lantana (*Lantana depressa* var *floridana*) - along roadside; devil's shoestring (*Tephrosia angustissima*; Brooks, 1989); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

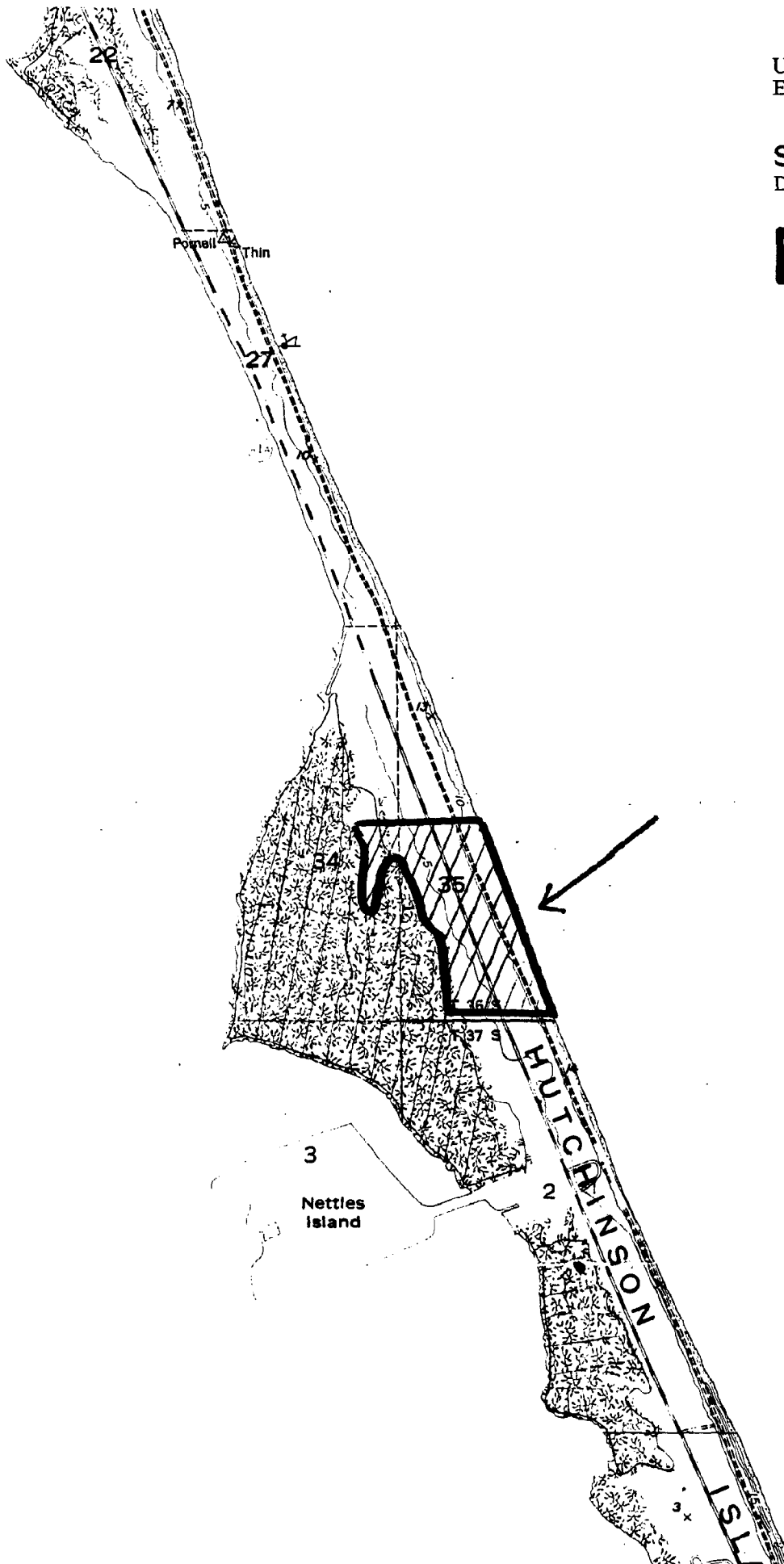
**Disturbance:** none observed

**Surrounding land use:** golf course and residential to north, residential and mangroves to south.

**Ownership:** public: county - undeveloped park.

U.S.G.S. QUAD:  
Eden, 1970

**STLU-9**  
Dollman Tract



## Coastal Uplands Site Summary

### MART-1

#### Bob Graham Park, Martin County, Florida.

Approximate acreage: 55

Topographic map: St. Lucie Inlet

Florida D.O.T. aerial photograph: PD3437-15-18 (4/17/86)

Survey date: 18 April 1990 (F90JOH50)

**Physical setting:** narrow upland portion of barrier island only ca 200 ft wide at this point; in some areas beach sand is spilling into former mangrove zone and beach dune community re-establishing behind current foredune.

**Plant communities:** beach dune, coastal strand

**beach dune:** (B) no sea oats (*Uniola paniculata*) seen here but freeze-killed seagrape (*Coccoloba uvifera*) covers the outer dune and sand is spilling over the dune to low area behind into remnant mangroves. This area is now being colonized by a dense stand of young Australian pine (*Casuarina equisetifolia*) which appears to be unaffected by the freeze of December 1989. In 1983 Burch and Posin (1983, F83BUR09) noted erosion into a sea oats foredune in this area. This erosion has by 1990 evidently reached the seagrape zone.

**coastal strand:** (C) patchy remnants of this community consisting of spanish bayonet (*Yucca aloifolia*) and seagrape behind the foredune intermingled with pioneer beach species colonizing bare sand spilling over the dune, including sea purslane (*Sesuvium portulacastrum*), sea rocket (*Cakile lanceolata*), beach sunflower (*Helianthus debilis*), and beach elder (*Iva imbricata*).

**Rare species:** necklace pod (*Sophora tomentosa*) - 2 plants seen in disturbed area between the strand and Australian pine zones at north end of area (Burch and Posin, 1983, F83BUR09); sea lavender (*Tournefortia gnaphalodes*) - several plants south of beach access road (Burch and Posin, 1983, F83BUR10; Wickham, 1988) which appear to have survived the 1989 freeze (Noyes, 1990); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

**Disturbance:** Australian pine invading former mangrove area now being filled by sand spilling over the foredune.

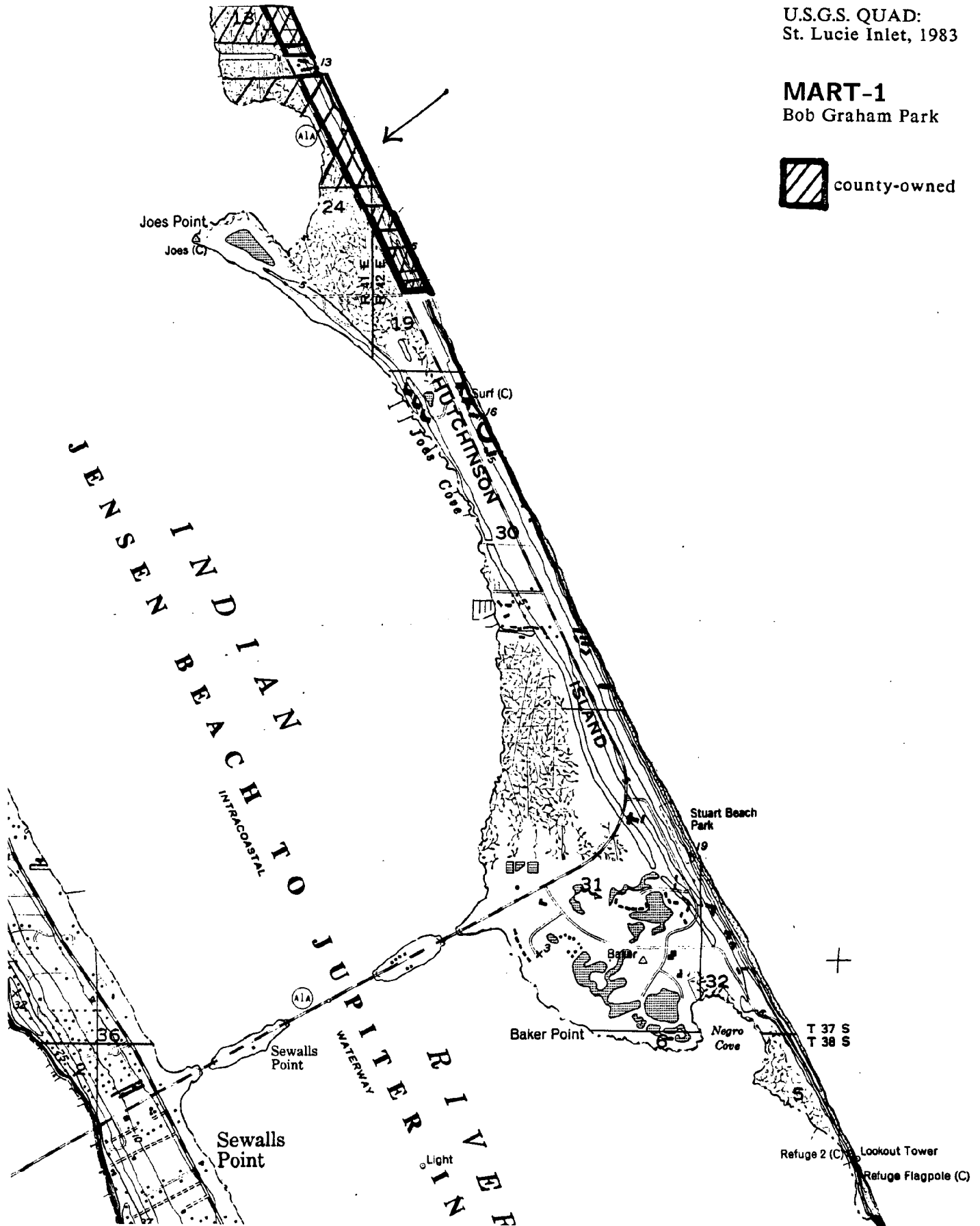
**Surrounding land use:** Jensen Beach Park (county) to north; Holiday Inn in center; residential to south.

**Ownership:** public: county - about 2/3 of area including Bob Graham Park and three parcels to south; private: Venus enterprises, Pasley, Dubner, Martin County Associates II - totalling ca 5 acres.

**Comments:** Jensen Beach Park (county) to north of this parcel is entirely composed of Australian pine forest.

U.S.G.S. QUAD:  
St. Lucie Inlet, 1983

**MART-1**  
Bob Graham Park



## Coastal Uplands Site Summary

### MART-2

#### Stuart Beach Park, Martin County, Florida.

Approximate acreage: 60

Topographic map: St Lucie Inlet

Florida D.O.T. aerial photograph: PD3437-16-20 (4/17/86)

Survey date: 18 April 1986 (F90JOH46 and F90JOH48)

**Physical setting:** broader portion of Hutchinson Island about 1000 ft of which is upland and another 1000 ft mangrove. Upland ridges bearing hammock vegetation extend N-S in southern portion of mangrove area. Five-foot cliff eroded into strand zone a result of the 1984 Thanksgiving Day storm, according to a lifeguard.

**Plant communities:** coastal strand, maritime hammock, xeric hammock  
**beach dune:** (C) no sea oats dune present - 5 ft cliff eroded into strand zone.  
**coastal strand:** (B) Strand dominated by saw palmetto (*Serenoa repens*) with occasional freeze-killed seagrape (*Coccoloba uvifera*) and beach berry (*Scaevola plumieri*).  
**maritime hammock:** (A) west of A1A hammock consists of a short-canopied (20 ft) live oak/ redbay forest with an understory of saw palmetto (*Serenoa repens*), myrsine (*Rapanea punctata*), and marlberry (*Ardisia escallonioides*). In places butterfly orchids (*Encyclia tampensis*) occur on the limbs of the oaks. On the ridges in the mangrove area to the southwest the hammock canopy is taller (40-50 ft), redbay less prominent; cabbage palm (*Sabal palmetto*) more so, and spanish stopper (*Eugenia foetida*) abundant in the understory.  
**xeric hammock:** (A) short forest dominated by sand live oak (*Quercus geminata*) with understory of saw palmetto.

**Rare species:** coastal vervain (*Glandularia maritima*) - paths through strand zone north of park; golden leather fern (*Acrostichum aureum*) - mangrove fringes (Woodbury, 1989); loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

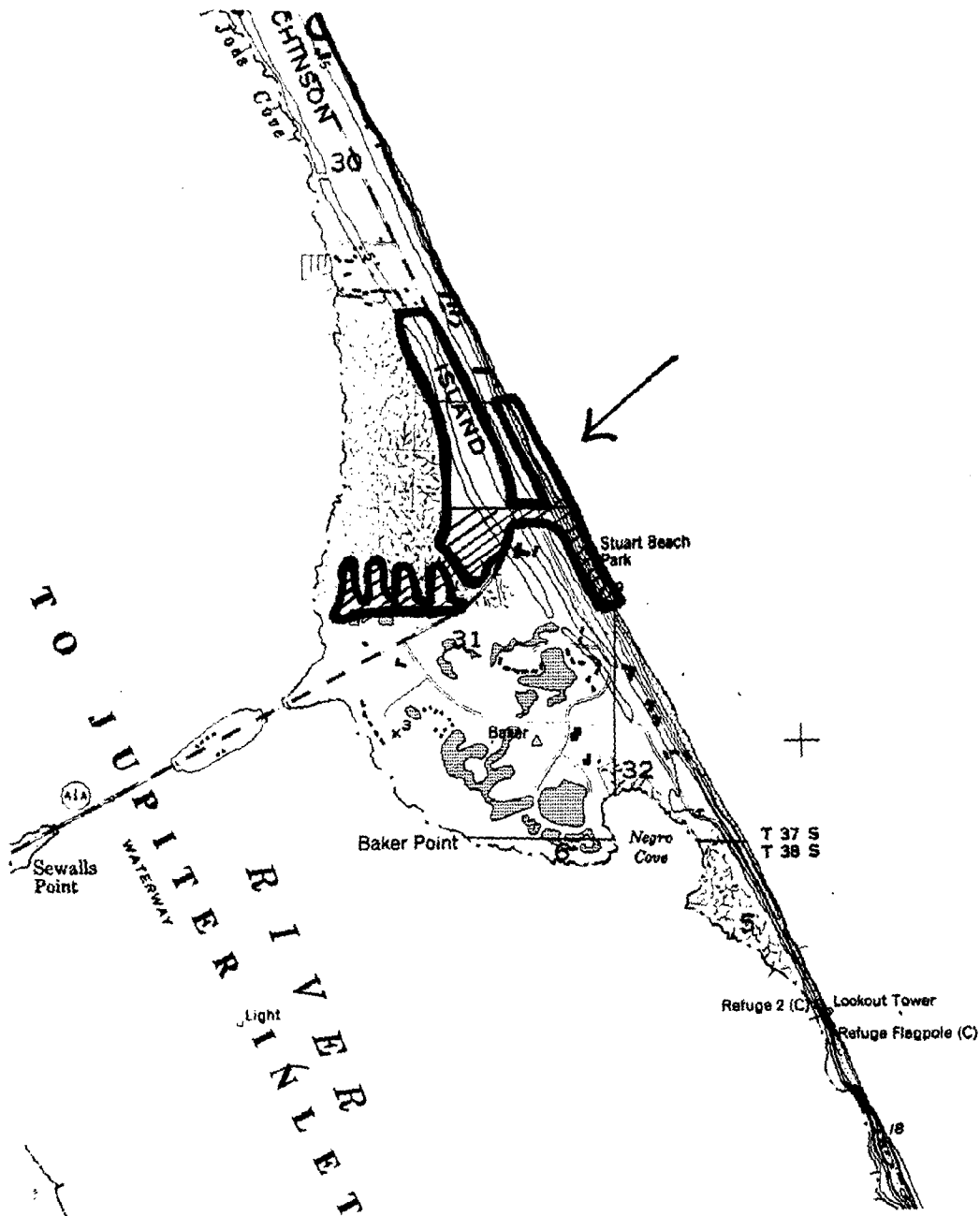
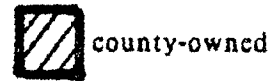
**Disturbance:** ditching and diking mangrove fringe for mosquito control has allowed invasion of Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*), which is also prominent along verge of A1A. Strand area in park largely cleared for parking lot, snack bar and bath houses. Canopy of northern portion of hammock along A1A partially killed by salt spray due to clearing of strand to east of it across A1A.

**Surrounding land use:** golf course and residential to south; mangroves to west; residential and scraped to north.

**Ownership:** public: county - Stuart Beach Park; private nonprofit: west of A1A - the Florida Oceanographic Society leases from the county the southern 30 acres for research facilities and nature trail; private: Landmark First National Bank - ca 28 acres; Van Schoonhaven Midgely - ca 2 acres.

U.S.G.S. QUAD:  
St. Lucie Inlet, 1983

**MART-2**  
Stuart Beach Park



## Coastal Uplands Site Summary

### MART-3

#### House of Refuge, Martin County, Florida.

Approximate acreage: 53

Topographic map: St. Lucie Inlet

Florida D.O.T. aerial photograph: PD3437-16-18 (4/17/86)

Survey date: 14 April 1990 (F90JOH45)

Physical setting: narrow (less than 200 ft width) portion of Hutchinson Island with one area of coquina rock outcrop on shore.

Plant communities: beach dune, coastal strand

beach dune: (this survey and Burch and Posin, 1983, F83BUR11) (A) low sea oats dune or sea oats growing on sand covering coquina rock which forms a cliff along part of the shoreline. Freeze-killed white indigoberry (*Randia aculeata*) and beach berry (*Scaevola plumieri*) scattered among the sea oats.

coastal strand: (this survey and Burch and Posin, 1983, F83BUR11) (A) saw palmetto (*Serenoa repens*) and seagrape (*Coccoloba uvifera*) near beach; strangler fig (*Ficus aurea*), seagrape and marlberry (*Ardisia escallonioides*) farther back. Sea grape largely uninjured by freeze of December 1989. Strand south of House of Refuge is dominated by Florida privet (*Forestiera segregata*).

Rare species: necklace pod (*Sophora tomentosa*) - one plant seen in strand zone; loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

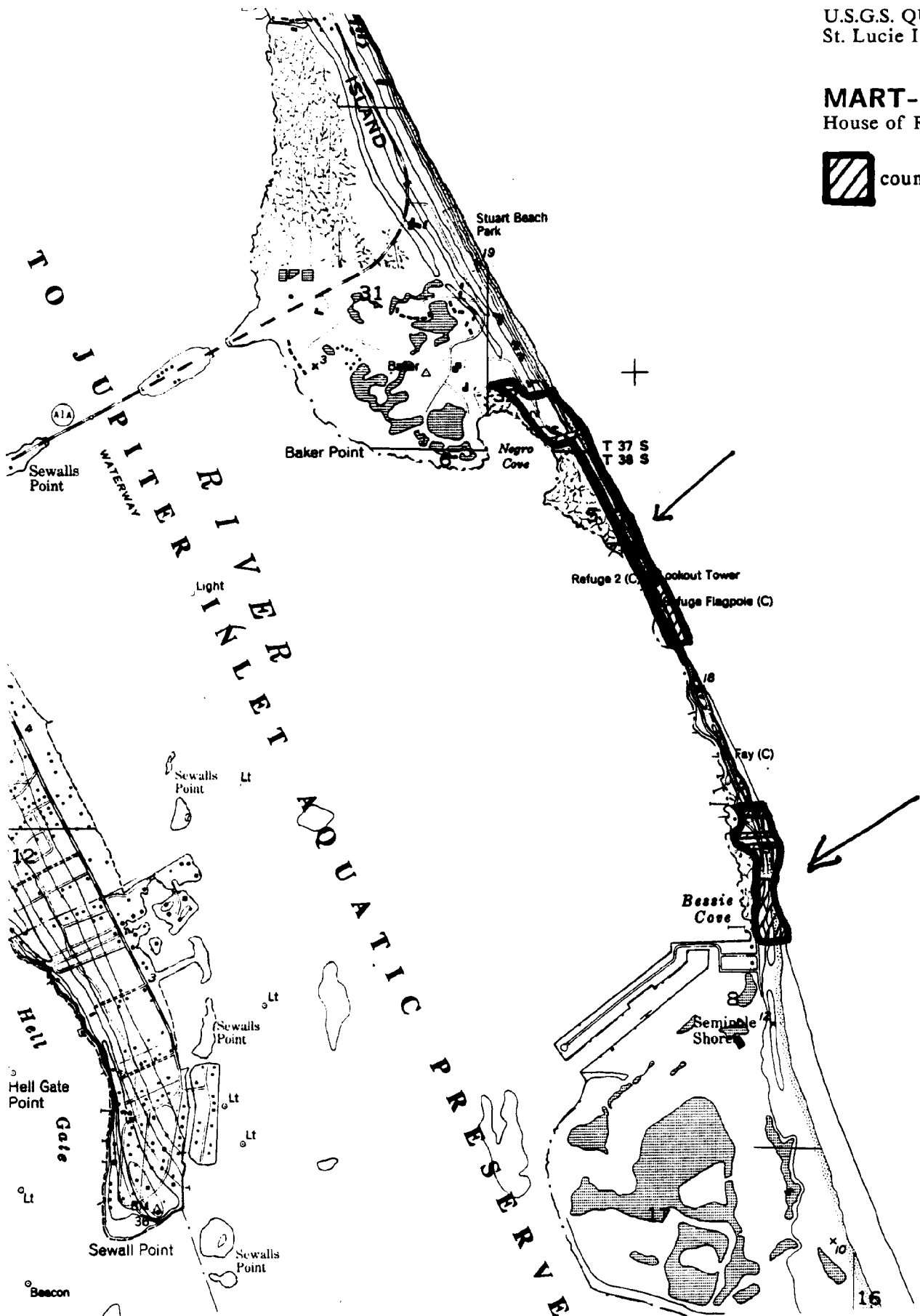
Disturbance: some Brazilian pepper (*Schinus terebinthifolius*) along A1A.

Surrounding land use: residential to north and south

Ownership: public: county ( including House of Refuge, Bathtub Beach, and beach access areas); private: several owners; northern portion owned by Santa Lucea Land Development (Noyes, 1990).

## MART-3

### House of Refuge



## Coatal Uplands Site Summary

### MART-4

#### Sailfish Point, Martin County, Florida

Approximate acreage: 44

Topographic map: St. Lucie Inlet

Florida D.O.T. aerial photograph: PD3437-16-18 (4/17/86)

Survey date: 18 April 1990 (F90JOH47)

Physical setting: prograding beach north of jetty at St. Lucie Inlet; comparison of 1943 and 1983 U.S.G.S. 7.5 minute quadrangles (St. Lucie Inlet) shows that 2/3 of total acreage has been added to beach since 1943, due to trapping of sand north of jetty.

Plant communities: beach dune, coastal strand

beach dune: (A+) newly-deposited sand near jetty colonized by a diversity of pioneer species including beach star (*Remirea maritima*), beach orach (*Atriplex pentandra*), beach elder (*Iva imbricata*), bitter panicum (*Panicum amarulum*), sea rocket (*Cakile lanceolata*), and saltwort (*Salsola kali*). Continuous foredune north of jetty dominated by sea oats (*Uniola paniculata*) with beach elder and beach cordgrass (*Spartina patens*) also prominent. Older dune behind foredune has less cover of sea oats and more cover of beach tea (*Croton punctatus*), evening primrose (*Oenothera humifusa*), and scattered shrubs of cocoplum (*Chrysobalanus icaco*) and sea grape (*Coccoloba uvifera*), both of which had been killed back by the freeze of December 1989.

coastal strand: (C) small disturbed stand of 5-foot tall sea grape, beach berry (*Scaevola plumieri*), and coinvine (*Dalbergia ecastophyllum*) behind sea oats foredune at extreme south end of area. Shrubs killed back by freeze of December 1989.

Rare species: beach star (*Remirea maritima*) - healthy stand in both pioneer and developed foredune area; necklace pod (*Sophora tomentosa*) - several plants on second dune line; loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

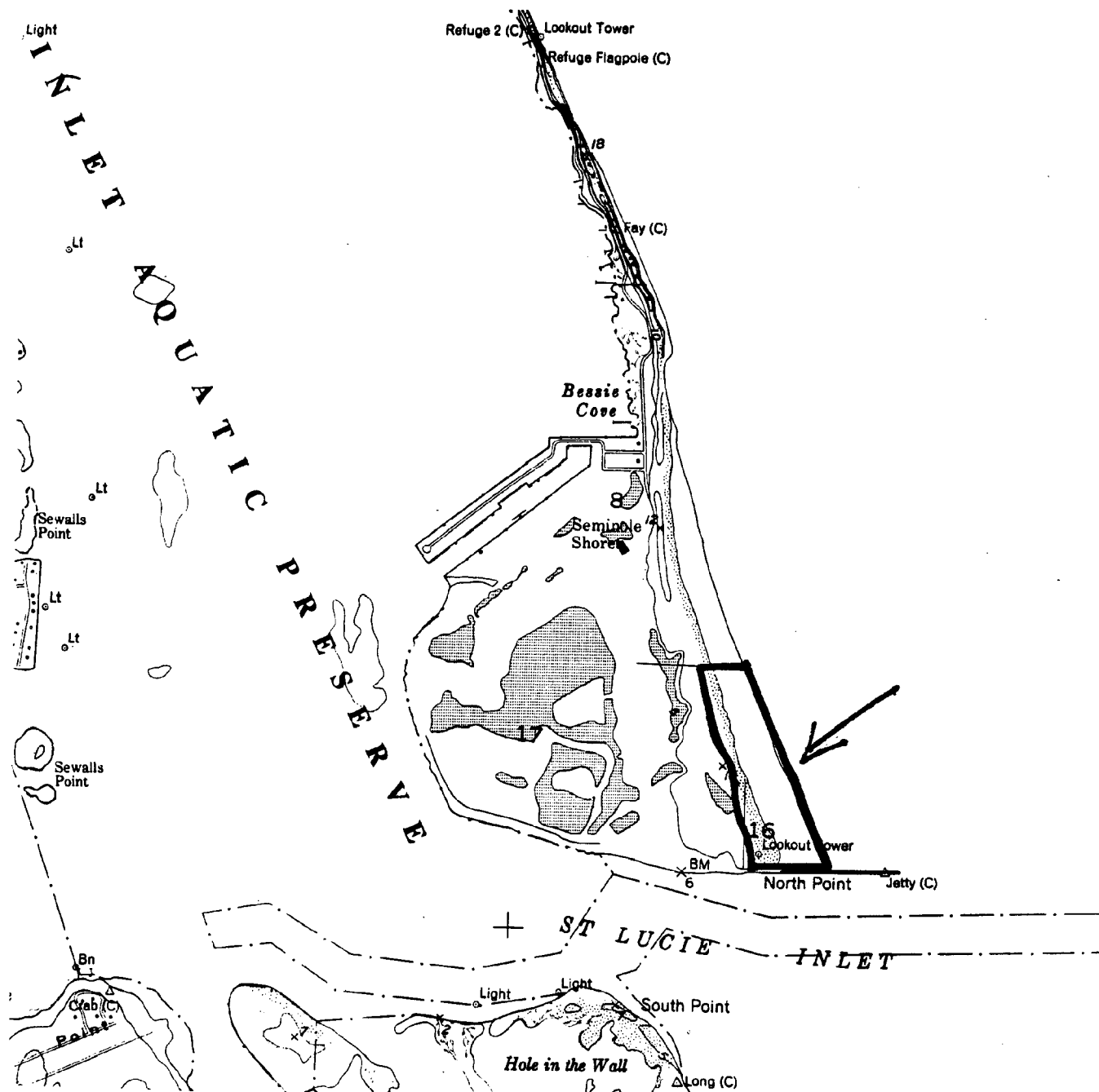
Disturbance: area of coastal strand has been reduced by clearing for development from ca 16 acres reported by Burch and Posin in 1983 (F83BUR12) to a few acres in 1990.

Surrounding land use: golf course to west; residential and clubhouse to north; inlet to south; ocean to east.

Ownership: private: Mobil Oil (Seminole Shores Development, Frank Evans, 407/4644-0497).

U.S.G.S. QUAD:  
St. Lucie Inlet, 1983

**MART-4**  
Sailfish Point



## Coastal Uplands Site Summary

### MART-5

#### St. Lucie Inlet State Recreation Area and Hobe Sound National Wildlife Refuge, Martin County, Florida.

Approximate acreage: 134

Topographic map: St. Lucie Inlet, Gomez

Florida D.O.T. aerial photograph: PD3437-16-16, 16-14, 17-11, 17-09 (4/17/86)

Survey date: 11 April 1990 (F90BET01; F90JOH31)

Physical setting: heavily eroded barrier island and fringing mangroves south of St. Lucie Inlet. Sand at least 50% shell mixed with quartz.

Plant communities: beach dune, coastal strand, maritime hammock

beach dune: (A) (Burch and Posin, 1983, F83BUR13; and this survey - F90BE01) continuous undeveloped beach extending for 5.5 miles south of St Lucie Inlet. Beach varies from a broad low plain with several low dune ridges near the jetty where beach was recently re-nourished (Miller, 1990, pers. comm.) to a narrow strip of sand spilling into mangrove zone a few miles to the south. Common species are sea oats (*Uniola paniculata*), bitter panicum (*Panicum amarum* var *amarulum*), beach elder (*Iva imbricata*), and sea purslane (*Sesuvium portulacastrum*). Beach star (*Remirea maritima*) covers broad patches near the jetty with its wide-ranging runners. Beach is backed by nearly continuous stand of tall Australian pine (*Casuarina equisetifolia*) heavily damaged by the freeze of December 1989.

coastal strand: (C) native strand displaced by nearly monospecific stand of tall Australian pines.

maritime hammock: (A) (Burch and Posin, 1983, F83BUR13 and this survey - F90JOH31) - Tropical maritime hammock occupies long, narrow N-S running ridges in the mangrove zone. Ridge crossed by park boardwalk to the beach is composed of both temperate and tropical canopy trees. Temperate trees include redbay (*Persea borbonia*), cabbage palm (*Sabal palmetto*), and live oak (*Quercus virginiana*); tropical trees are primarily mastic (*Mastichodendron foetidissimum*), gumbo limbo (*Bursera simarouba*), and strangler fig (*Ficus aurea*). Most of the tropical species were sprouting new shoots from their trunks (epicormic flushing) after the freeze of December 1989. The other hammock seen had a purely tropical canopy and short tropical trees in understory, including spanish stopper (*Eugenia foetida*), white stopper (*Eugenia axillaris*), lancewood (*Nectandra coriacea*), and marlberry (*Ardisia escallonioides*).

Rare species: sea lavender (*Tournefortia gnaphalodes*) - 1 dead shrub seen near jetty; 2 seedlings found in wildlife refuge portion; beach star (*Remirea maritima*) - abundant near the jetty behind the foredunes; least tern (*Sterna antillarum*) - approximately 20 pairs nest on the broad beach south of the jetty (Miller, 1990, pers. comm.); loggerhead turtle (*Caretta caretta*) - 182 nests/km (Hopkins and Richardson, 1984).

Disturbance: the exotic vining shrub, *Colubrina asiatica*, forms a dense stand along higher portions of mangrove stands; Brazilian pepper (*Schinus terebinthifolius*) has heavily invaded the mangrove fringe and, to a lesser extent, the hammock understory; Australian pine (*Casuarina equisetifolia*) has essentially displaced the native strand community behind the beach. Jetted inlet built in 1892 has caused about 1/2 mile of

### **Coastal Uplands Site Summary**

recession in beaches to the south of it, according to offset seen in 1986 Florida D.O.T. aerial photograph.

**Surrounding land use:** residential to south; water to north, east, and west.

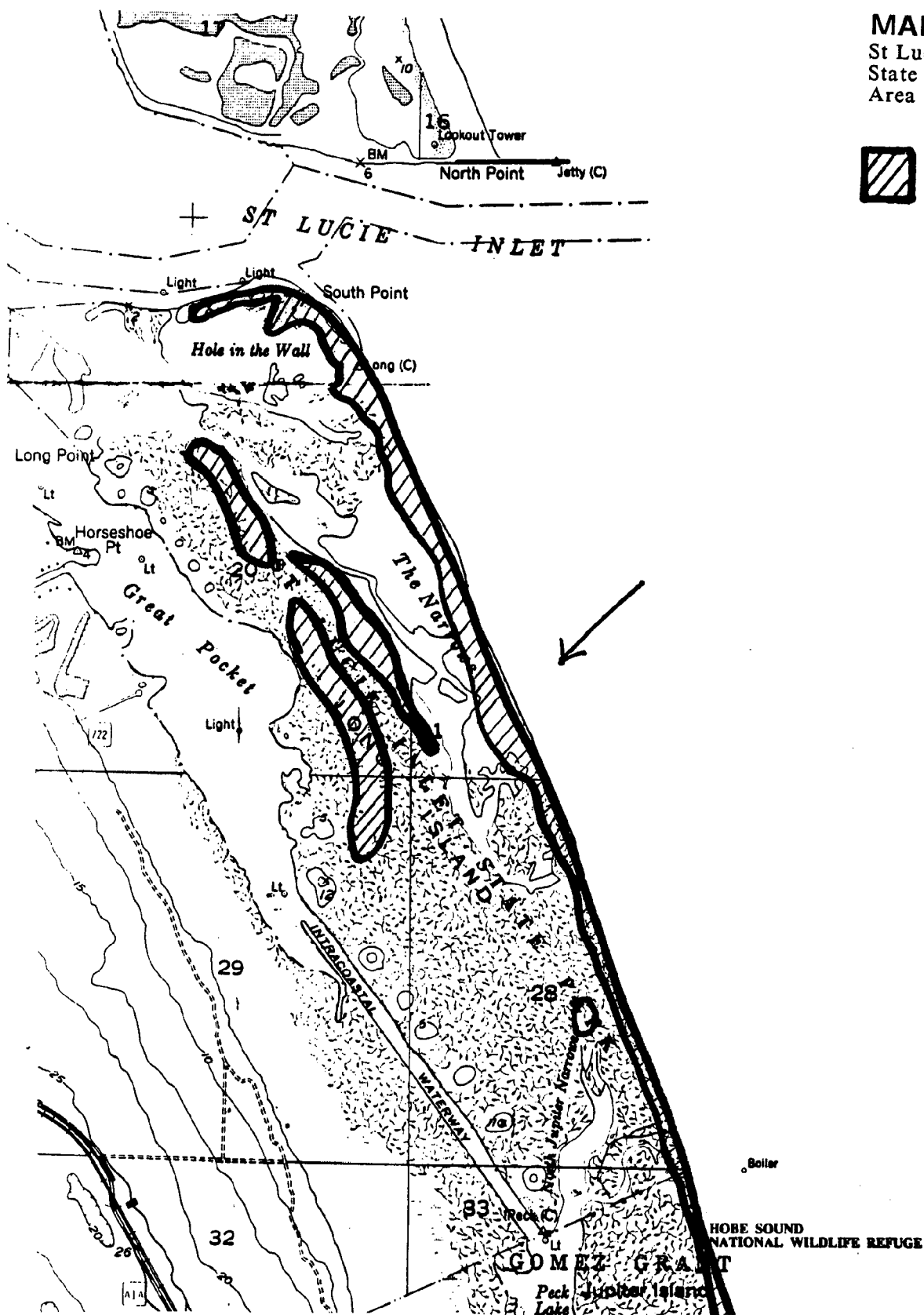
**Ownership:** public: state (St. Lucie Inlet State Recreation Area) - northern half; *federal:* (Hobe Sound National Wildlife Refuge) - southern half.

U.S.G.S. QUAD:  
St. Lucie Inlet, 1983

**MART-5**  
St Lucie Inlet  
State Recreation  
Area




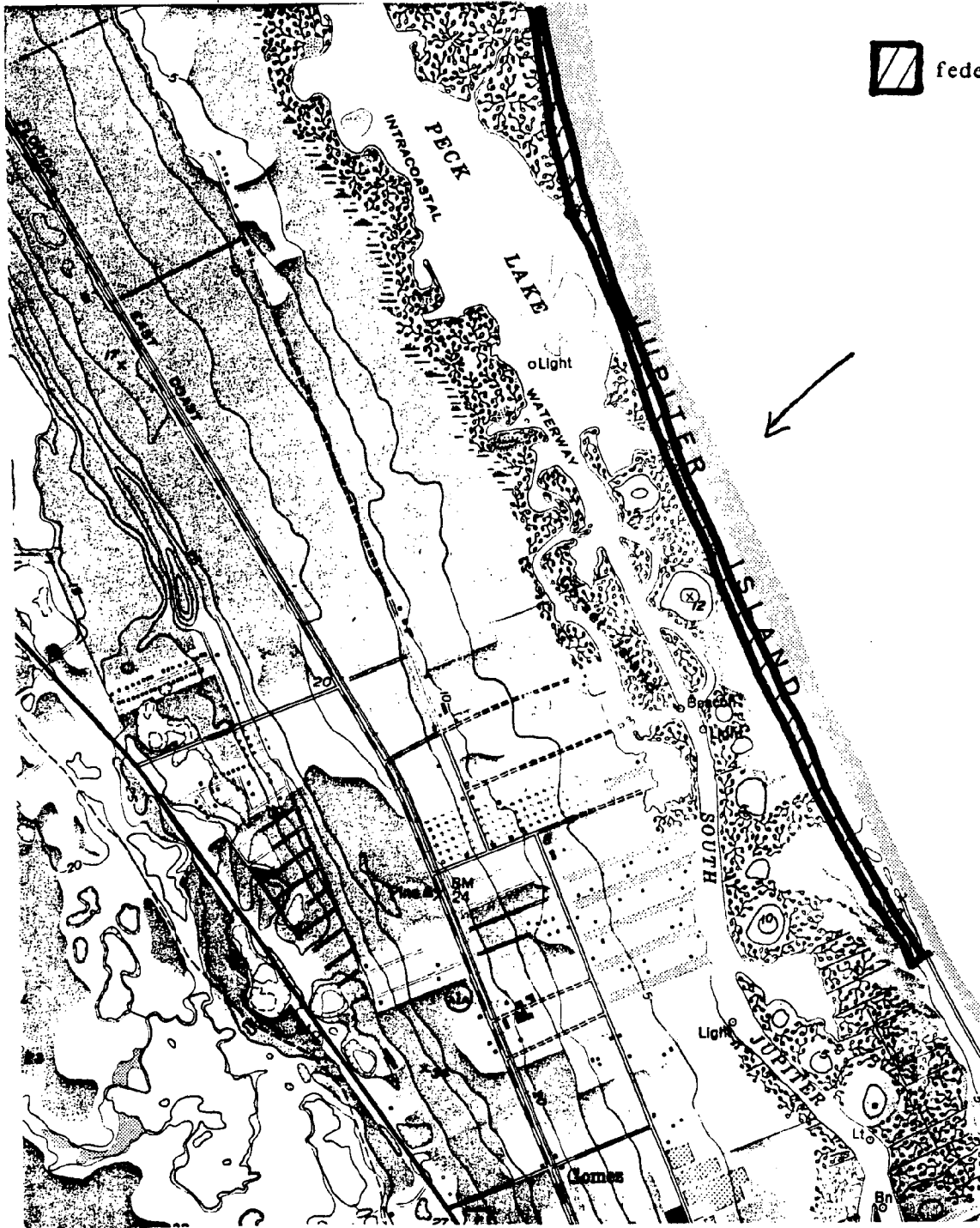
state-owned



U.S.G.S. QUAD:  
Gomez, 1967

**MART-5**  
Hobe Sound National  
Wildlife Refuge

 federally owned



## Coastal Uplands Site Summary

### MART-6

#### Hobe Sound, Martin County, Florida.

Approximate acreage: 16

Topographic map: Hobe Sound

Florida D.O.T. aerial photograph: PD3437-18-06 (4/17/86)

Survey date: 12 April 1990 (F90JOH32)

Physical setting: narrow portion of barrier island south of bridge from Hobe Sound; strand zone occupied by houses.

Plant communities: beach dune, maritime hammock

beach dune: (B) narrow sea oats dune backed by Australian pines.

maritime hammock: (C) low (20'), disturbed hammock dominated by the exotic Brazilian pepper (*Schinus terebinthifolius*) with scattered freeze-killed Australian pines (*Casuarina equisetifolia*) extending above the general canopy. Native species include primarily myrsine (*Rapanea punctata*), wild lime (*Zanthoxylum fagara*), seagrape (*Coccoloba uvifera*), and cabbage palm (*Sabal palmetto*), with a profusion of vines covering the whole including Virginia creeper (*Parthenocissus quinquefolia*) and grape (*Vitis munsoniana*). Area along road (both Gomez and Beach roads) has been landscaped with exotics (Chinese fan palm and others).

Rare species: loggerhead turtle (*Caretta caretta*) - 182 nests/km (Hopkins and Richardson, 1984).

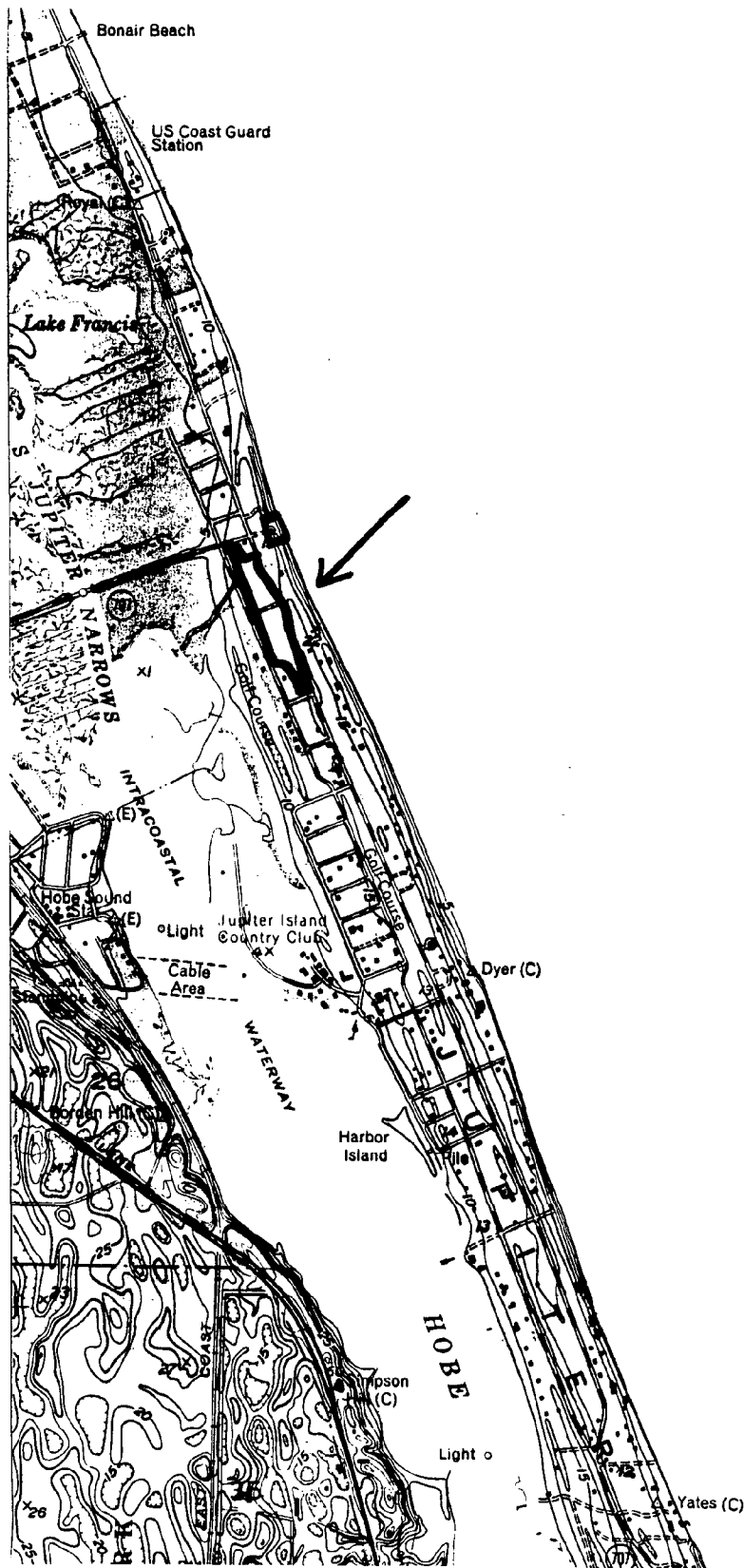
Disturbance: heavy invasion of Brazilian pepper and some Australian pine. Dumping in clearing in central portion of area north of a dirt road connecting Beach and Gomez roads.

Surrounding land use: commercial and residential to north; residential to east, south, and west.

Ownership: public: town of Jupiter (?) - hammock portion; county - Hobe Sound Public Beach

U.S.G.S. QUAD:  
Hobe Sound, 1967

**MART-6**  
Hobe Sound



## Coastal Uplands Site Summary

### MART-7

#### Jupiter Estates North, Martin County, Florida

Approximate acreage: 55

Topographic map: Hobe Sound

Florida D.O.T. aerial photograph: PD3437-18-04 (4/17/86)

Survey date: 6 December 1990 (F90JOH87)

**Physical setting:** narrow barrier island less than 1/2 mile wide reaching 15-ft elevation in center. Portions of native hammock and strand vegetation preserved on some large estates.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) the narrow beach has been re-nourished. Patchy sea oats dunes in front of woody strand vegetation.

**coastal strand:** (C) appears to have been partly cleared, as well as narrowed by erosion. Grades abruptly up to 30-ft high hammock near the coast.

**maritime hammock:** (A) predominantly tropical, the common trees being sea grape (*Coccoloba uvifera*), strangler fig (*Ficus aurea*), and gumbo limbo (*Bursera simarouba*), with only scattered representatives of temperate species such as live oak (*Quercus virginiana*) and redbay (*Persea borbonia*). Understory trees include spanish stopper (*Eugenia foetida*), blolly (*Guapira discolor*), and wild lime (*Zanthoxylum fagara*).

**Rare species:** loggerhead turtle (*Caretta caretta*) - 182 nests/km (Hopkins and Richardson, 1984).

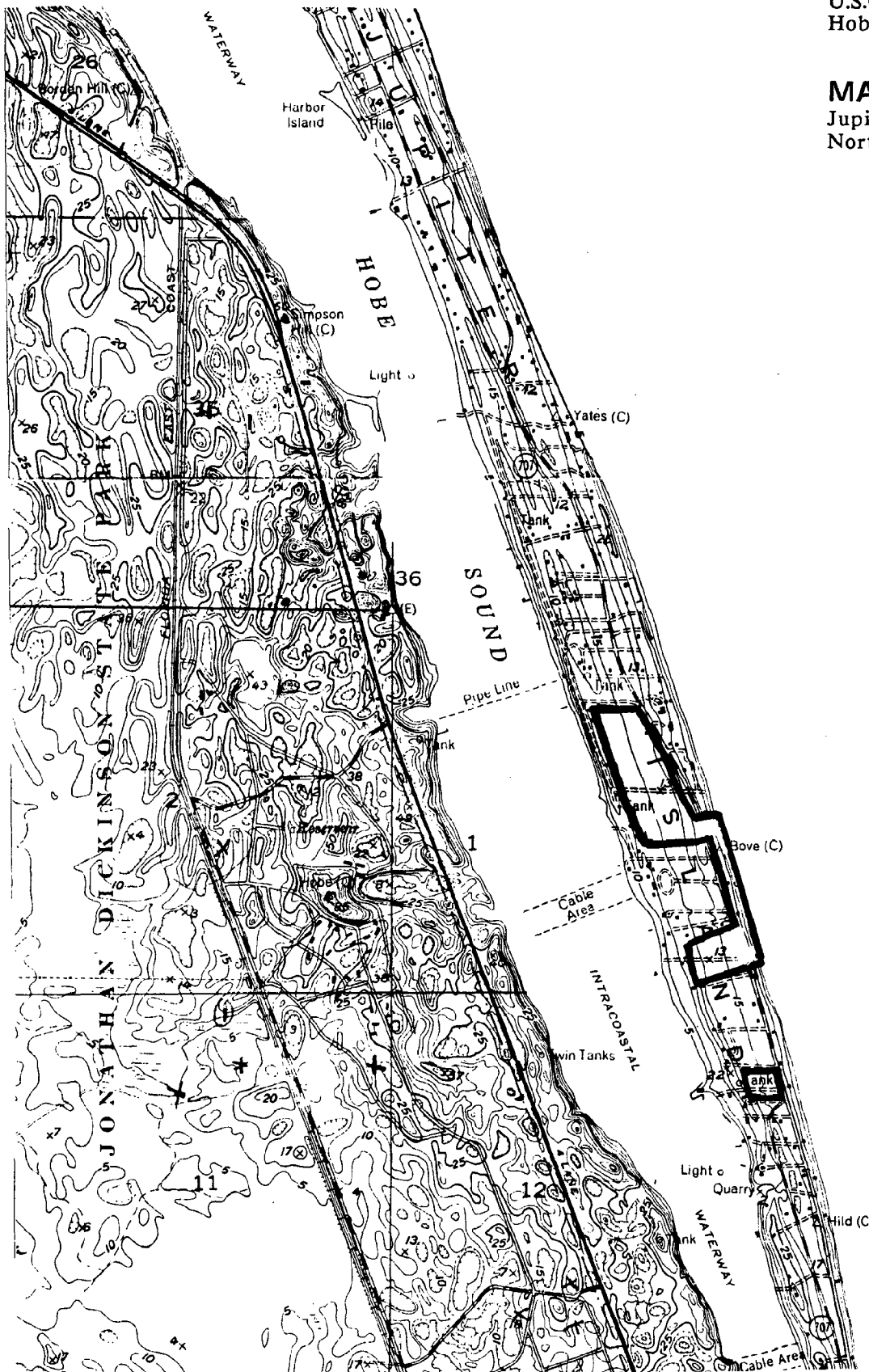
**Disturbance:** cutting of seaward vegetation has resulted in greater inland penetration of salt spray carried off the ocean by the prevailing easterlies. Salt burn has killed back the canopy of the taller figs and gumbo limbos, which are re-sprouting. Some invasion of brazilian pepper (*Schinus terebinthifolius*), Sansevieria, and Australian pine (*Casuarina equisetifolia*) especially along A1A.

**Surrounding land use:** residential and golf course

**Ownership:** private: large estates.

U.S.G.S. QUAD:  
Hobe Sound, 1967

**MART-7**  
Jupiter Estates  
North



## Coastal Uplands Site Summary

### MART-8

#### Jupiter Island Estates South, Martin County, Florida.

Approximate acreage: 16

Topographic map: Hobe Sound

Florida D.O.T. aerial photograph: PD3437-19-03, 18-04 (4/17/86)

Survey date: 12 April 1990 (F90JOH33)

**Physical setting:** medium width (0.4 mi) barrier island of gently undulating sand ridges reaching maximum elevation of 25 ft, running parallel to the coast. Little or no mangrove fringe.

**Plant communities:** beach dune, coastal strand, maritime hammock

beach dune: (B) narrow beach (re-nourished)

coastal strand: (A) low tropical species grading downward to sea grape near coast

maritime hammock: (A+) intact tropical hammock with large (2'diameter) trees of mastic (*Mastichodendron foetidissimum*), strangler fig (*Ficus aurea*), and gumbo limbo (*Bursera simarouba*) forming the canopy. Butterfly orchids (*Encyclia tampensis*) seen on limbs of redbay (*Persea borbonia*). Understory also tropical, dominated by spanish stopper (*Eugenia foetida*), wild coffee (*Psychotria nervosa*), and marlberry (*Ardisia escallonioides*). Small amount of Brazilian pepper (*Schinus terebinthifolius*) invasion confined to strip along A1A. Little freeze damage to tropical species from December 1989 freeze compared to disturbed site to north (MART-6).

**Rare species:** loggerhead turtle (*Caretta caretta*) - 182 nests/km (Hopkins and Richardson, 1984).

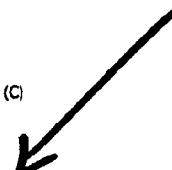
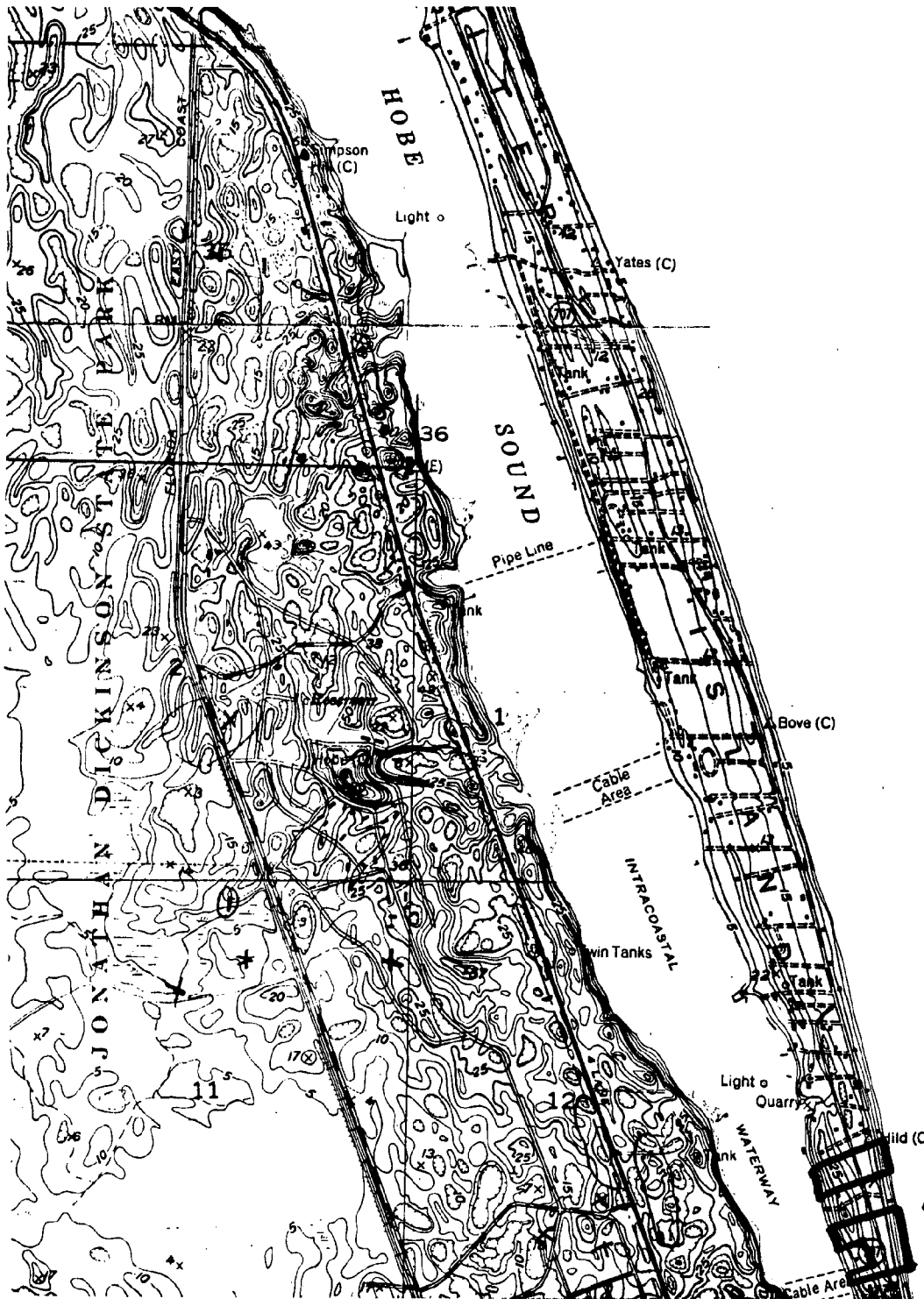
**Disturbance:** light Brazilian pepper invasion along A1A

**Surrounding land use:** residential (estates); lagoon side of these properties being cleared for building.

**Ownership:** private: north lot - Devine, 90 Washington St., New York, N.Y. 10015; south lot - Patricia Laus, Jupiter, Florida.

U.S.G.S. QUAD:  
Hobe Sound, 1967

**MART-8**  
Jupiter Estates  
South



## Coastal Uplands Site Summary

### MART- 9

#### Blowing Rocks Preserve, Martin County, Florida.

Approximate acreage: 53

Topographic map: Jupiter

Florida D.O.T. aerial photograph: PD3437-19-03 (4/17/86)

Survey date: 12 April 1990 (F90JOH34)

**Physical setting:** 5-10 ft cliff of coquina rock exposed at shoreline; this rock covered by sand to form foredune about 30 m inland from shore. Waves break explosively in solution holes and caves in this rock giving the beach its name.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) foredune dominated by sea oats

**coastal strand:** (A) backdune dominated by saw palmetto (*Serenoa repens*) with scattered seagrape (*Coccoloba uvifera*).

**maritime hammock:** (B) area east of A1A supported a tall forest of Australian pine (*Casuarina equisetifolia*) in 1985 when it was removed by The Nature Conservancy and planted to native hammock species. In 1942 Kurz (p.33) reported the area was covered by a "luxuriant impenetrable scrub thicket dominated by saw palmetto". Remnant hammock stands behind the taller foredunes at the north end of the property consist of poisonwood (*Metopium toxiferum*), blolly (*Guapira discolor*), gumbo limbo (*Bursera simarouba*), pigeon plum (*Coccoloba diversifolia*) and fiddlewood (*Citharexylum fruticosum*). North of houses near the north border of the property is a second hammock composed of strangler fig (*Ficus aurea*), mastic (*Mastichodendron foetidissimum*), pigeon plum (*Coccoloba diversifolia*), and cabbage palm (*Sabal palmetto*) with spanish stopper (*Eugenia foetida*) in the understory.

**Rare species:** coastal vervain (*Glandularia maritima*) - fewer than 10 plants seen in cleared area inland from the remnant hammock at the north end of the main property; beach star (*Remirea maritima*) - common on foredune (Cooper, 1983); necklace pod (*Sophora tomentosa*) - Cooper, 1983; loggerhead turtle (*Caretta caretta*) - 182 nests /km (Hopkins and Richardson, 1984).

**Disturbance:** heavy invasion of Australian pine west of A1A; zone cleared of Australian pine east of A1A.

**Surrounding land use:** residential to north and south

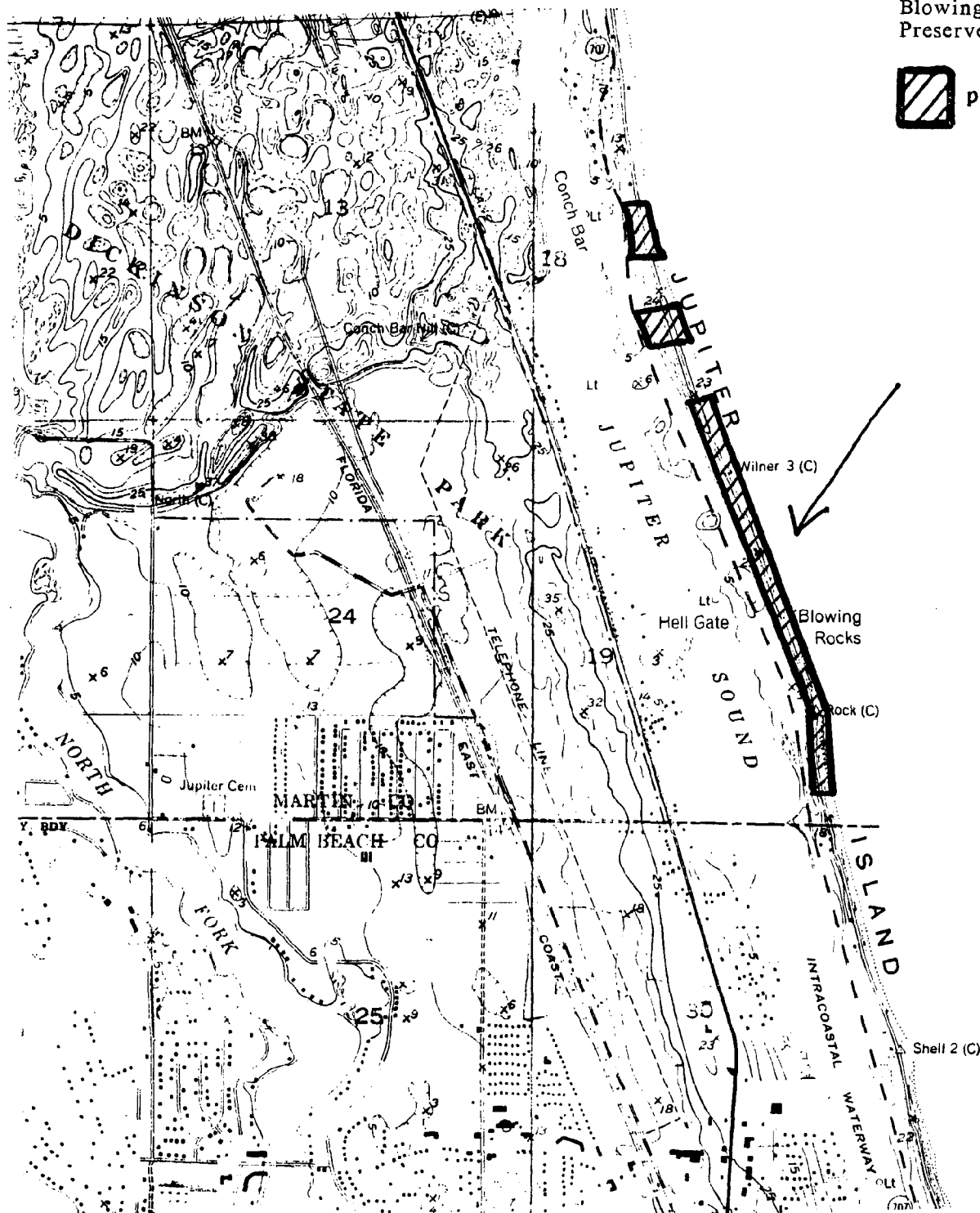
**Ownership: private (nonprofit):** The Nature Conservancy

U.S.G.S. QUAD:  
Jupiter, 1967

**MART-9**  
Blowing Rocks  
Preserve



private non-profit



## Coastal Uplands Site Summary

### **PALM-1**

#### **South Coral Cove Park, Palm Beach County, Florida.**

**Approximate acreage:** 17

**Topographic map:** Jupiter

**Florida D.O.T. aerial photograph:** PD3437-19-01 (4/17/86)

**Survey date:** 13 April 1990 (F90JOH35)

**Physical setting:** narrow portion of Jupiter Island immediately north of where it broadens north of Jupiter Inlet. Erosion has cut a 10' scarp into planted sea oats dune with beach elder (*Iva imbricata*) and railroad vine (*Ipomoea pes-caprae*) colonizing the beach at its base. Isolated slabs of coquina rock exposed in the surf zone.

**Plant communities:** beach dune

**beach dune:** (artificial - planted in spring 1989) dune has been bulldozed into place and planted with native vegetation in three zones (Griffiths, 1990, pers. comm.): sea oats (*Uniola paniculata*) plus seagrape (*Coccoloba uvifera*); beach sunflower (*Helianthus debilis*), and beach cordgrass (*Spartina patens*). Plants have irrigation spigots near them and look unusually large and green, except the seagrape which was killed back by the freeze of December 1989. Australian pines (*Casuarina equisetifolia*) surround the parking area east of A1A.

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - collected in this vicinity in 1962 by Olga Lakela and deposited in University of Florida herbarium; loggerhead turtle (*Caretta caretta*) - 182 nests/km (Hopkins and Richardson, 1984).

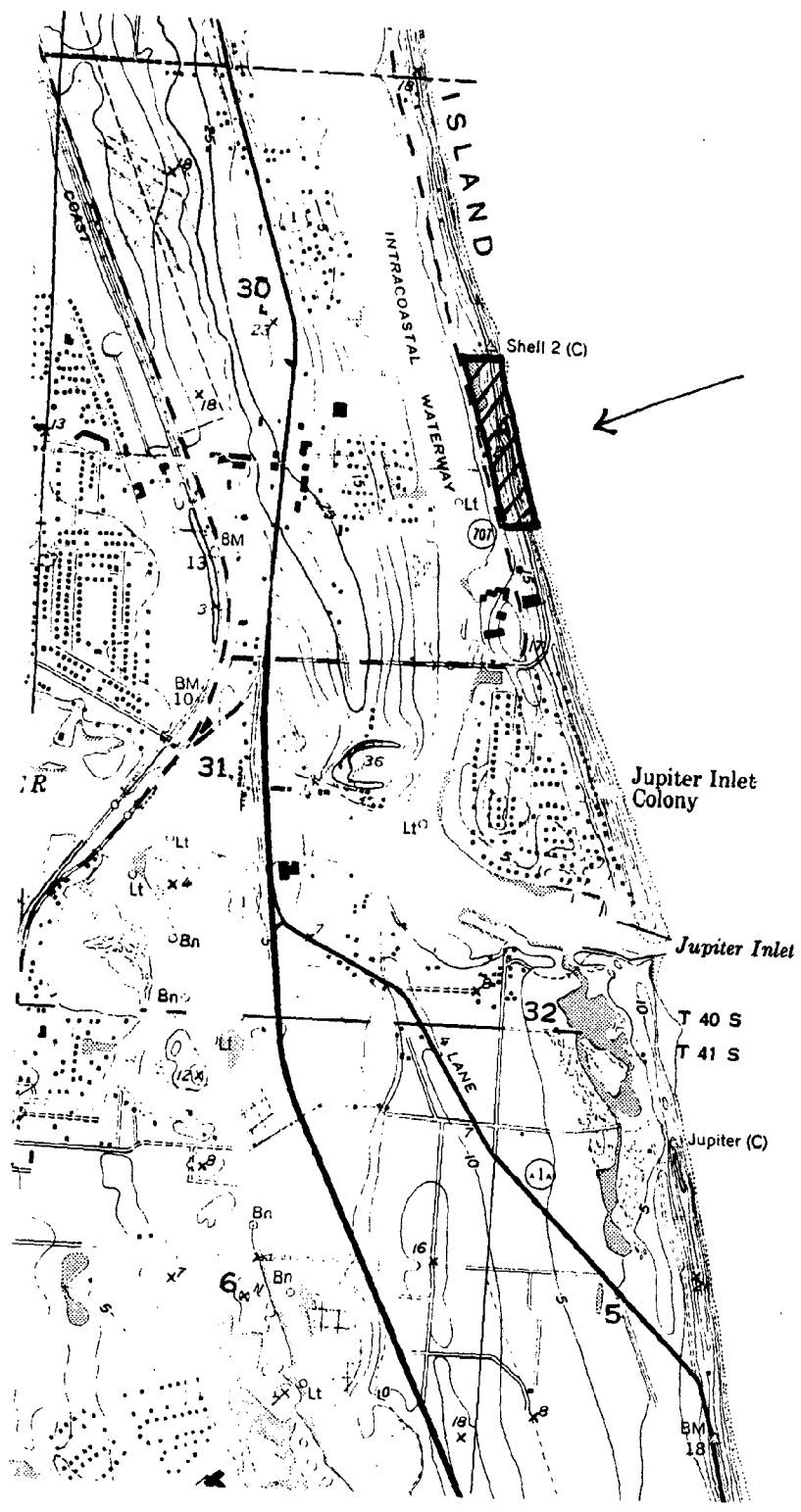
**Disturbance:** highly disturbed and partially restored to native vegetation.

**Surrounding land use:** urban development to south; developed recreational park (Coral Cove) to north; mangroves and A1A to west; Atlantic ocean to east.

**Ownership:** public: state (managed by Palm Beach County).

U.S.G.S. QUAD:  
Jupiter, 1967

**PALM-1**  
South Coral  
Cove Park



## Coastal Uplands Site Summary

### **PALM-2**

#### **Dubois Park, Palm Beach County, Florida.**

**Approximate acreage:** 33

**Topographic map:** Jupiter

**Florida D.O.T. aerial photograph:** PD3523-8A-19

**Survey date:** 13 April 1990 (F90JOH37)

**Physical setting:** beach south of Jupiter Inlet which is essentially attached to the mainland, being separated from it by only a narrow zone of mangroves.

**Plant communities:** beach dune

beach dune: (B) sea oats dune backed by parking lots to south and forest of tall Australian pines (*Casuarina equisetifolia*) to north near south jetty of Jupiter Inlet. Erosion has cut a 10' scarp into dune south of jetty decreasing southward to 1' in front of parking lots. Other common species include beach star (*Remirea maritima*), tread-softly (*Cnidoscolus stimulosus*), prickly pear (*Opuntia stricta*), and seagrape (*Coccoloba uvifera*).

**Rare species:** beach star (*Remirea maritima*) - common on foredune near parking lot; burrowing four o'clock (*Okenia hypogaea*) - specimen collected by Naumen (1977) and deposited in herbarium at Florida Atlantic University.

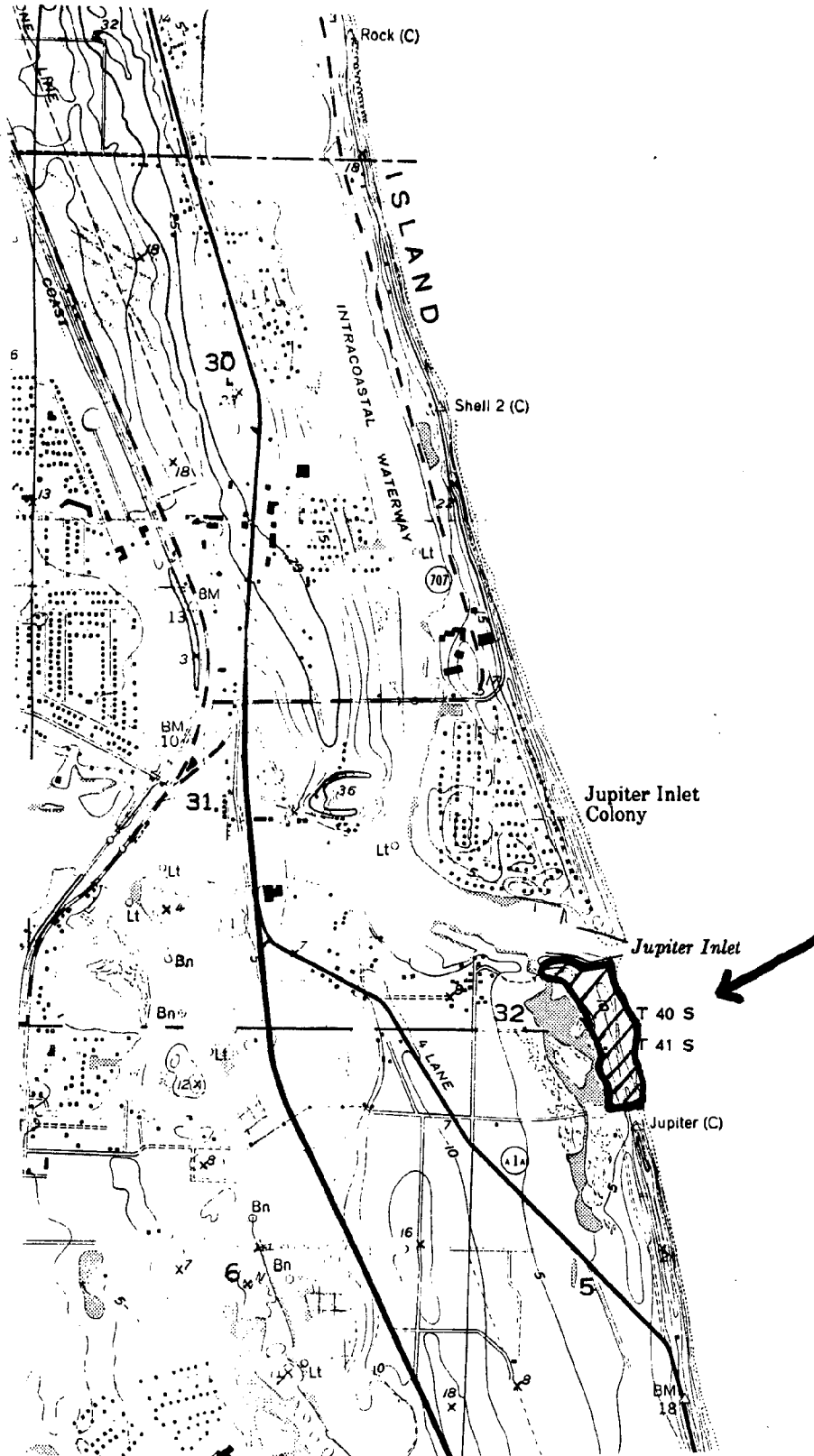
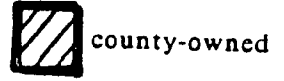
**Disturbance:** heavy invasion of Australian pine (*Casuarina equisetifolia*) behind the foredune; erosion due to south jetty at Jupiter Inlet.

**Surrounding land use:** inlet to north; urban development to west and south; Atlantic Ocean to east.

**Ownership:** public: Palm Beach County

U.S.G.S. QUAD:  
Jupiter, 1967

**PALM-2**  
Dubois Park



## Coastal Uplands Site Summary

### **PALM-3**

#### **Carlin Park, Palm Beach County, Florida.**

**Approximate acreage:** 22

**Topographic map:** Jupiter

**Florida D.O.T. aerial photograph:** PD3523-8A-19 (4/23/86)

**Survey date:** 13 April 1990 (F90JOH38)

**Physical setting:** mainland beach 3/4 mi south of Jupiter Inlet. A1A very close to shoreline.

**Plant communities:** beach dune

beach dune: (C) east of A1A is a 20' cliff to beach which has patches of sea oats (*Uniola paniculata*) and beach elder (*Iva imbricata*) with seagrape (*Coccoloba uvifera*) growing on cliff face.

**Rare species:** burrowing four o'clock (*Okenia hypogaea*) - collected in this vicinity by Naumen (1977) - specimen deposited in herbarium of Florida Atlantic University.

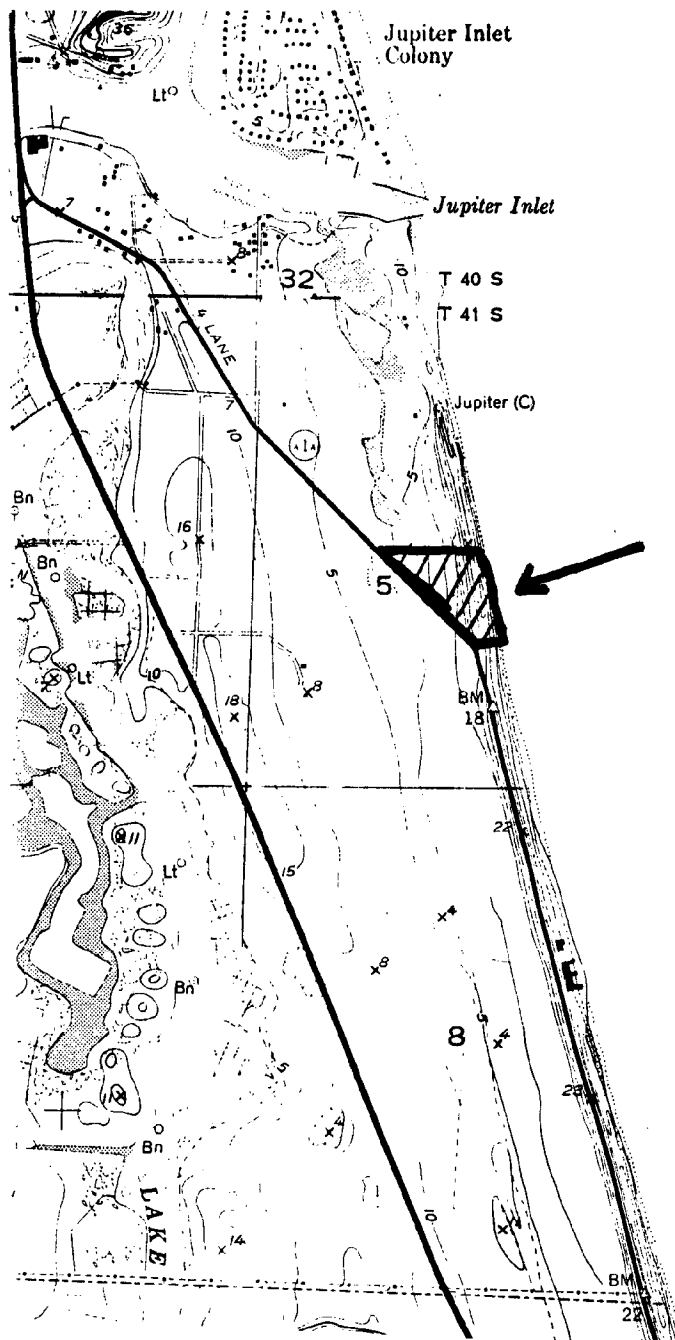
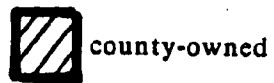
**Disturbance:** area west of A1A is a nearly pure stand of the exotic Brazilian pepper (*Schinus terebinthifolius*).

**Surrounding land use:** hotel to north; urban commercial to west; residential to south.

**Ownership:** public: Palm Beach County (developed park)

U.S.G.S. QUAD:  
Jupiter, 1967

**PALM-3**  
Carlin Park



## Coastal Uplands Site Summary

### **PALM-4**

#### **Radnor Beach Park, Palm Beach County, Florida.**

**Approximate acreage:** 138

**Topographic map:** Jupiter

**Florida D.O.T. aerial photograph:** PD3523-8A-17 (4/23/86)

**Survey date:** 13 April 1990 (F90JOH36; F90BET02)

**Physical setting:** beach attached to mainland; A1A runs close to steep bluff that descends 15-20 ft to beach (nourished?); land also drops off to west of A1A to long, narrow marshy area parallel to road with heavy Australian pine (*Casuarina equisetifolia*) invasion around the margins; land rises gradually to west to disturbed rosemary (*Ceratiola ericoides*) scrub.

**Plant communities:** beach dune, coastal strand, scrub

**beach dune:** (A) broad beach backed by low plateau of sea oats (*Uniola paniculata*). Other common species are seashore paspalum (*Paspalum distichum*), sea purslane (*Sesuvium portulacastrum*), and beach elder (*Iva imbricata*).

**coastal strand:** (A+) dense stand of mostly tropical shrubs about 12' tall along both sides of A1A. Major species are spanish stopper (*Eugenia foetida*), poisonwood (*Metopium toxiferum*), snowberry (*Chiococca alba*), seagrape (*Coccoloba uvifera*), wild lime (*Zanthoxylum fagara*), and myrsine (*Rapanea punctata*). Seagrape becomes dominant seaward. Poisonwood and the parasitic woevine (*Cassytha filiformis*) were killed back by the freeze of December 1989; poisonwood is resprouting vigorously, but woevine showed no signs of recovery. Other vines blanketing the tops of the shrubs include Virginia creeper (*Parthenocissus quinquefolia*), catbriar (*Smilax auriculata*), and grape (*Vitis munsoniana*).

**scrub:** (B) open shrub area with different areas dominated by scrub oaks (*Quercus geminata*, *Q. myrtifolia*), low sand pines (*Pinus clausa*), rosemary shrubs, and grasses (Farnsworth, 1988).

**Rare species:** burrowing four o'clock (*Okenia hypogaea*) - one small patch under walkover to beach; beach star (*Remirea maritima*) - patchy in flat areas between sea oats dunes; four petal pawpaw (*Asimina tetramera*) - over 80 plants tagged in scrub area (Farnsworth, 1988); large-flowered rosemary (*Conradina grandiflora*) - scattered throughout scrub site; Curtiss' milkweed (*Asclepias curtissii*) - 4 plants seen in scrub (Farnsworth, 1988); gopher tortoise (*Gopherus polyphemus*) - over 50 active burrows seen on scrub site (Farnsworth, 1988); scrub jay (*Aphelocoma coerulescens coerulescens*) - 5 jays seen in scrub area (Cox, 1981).

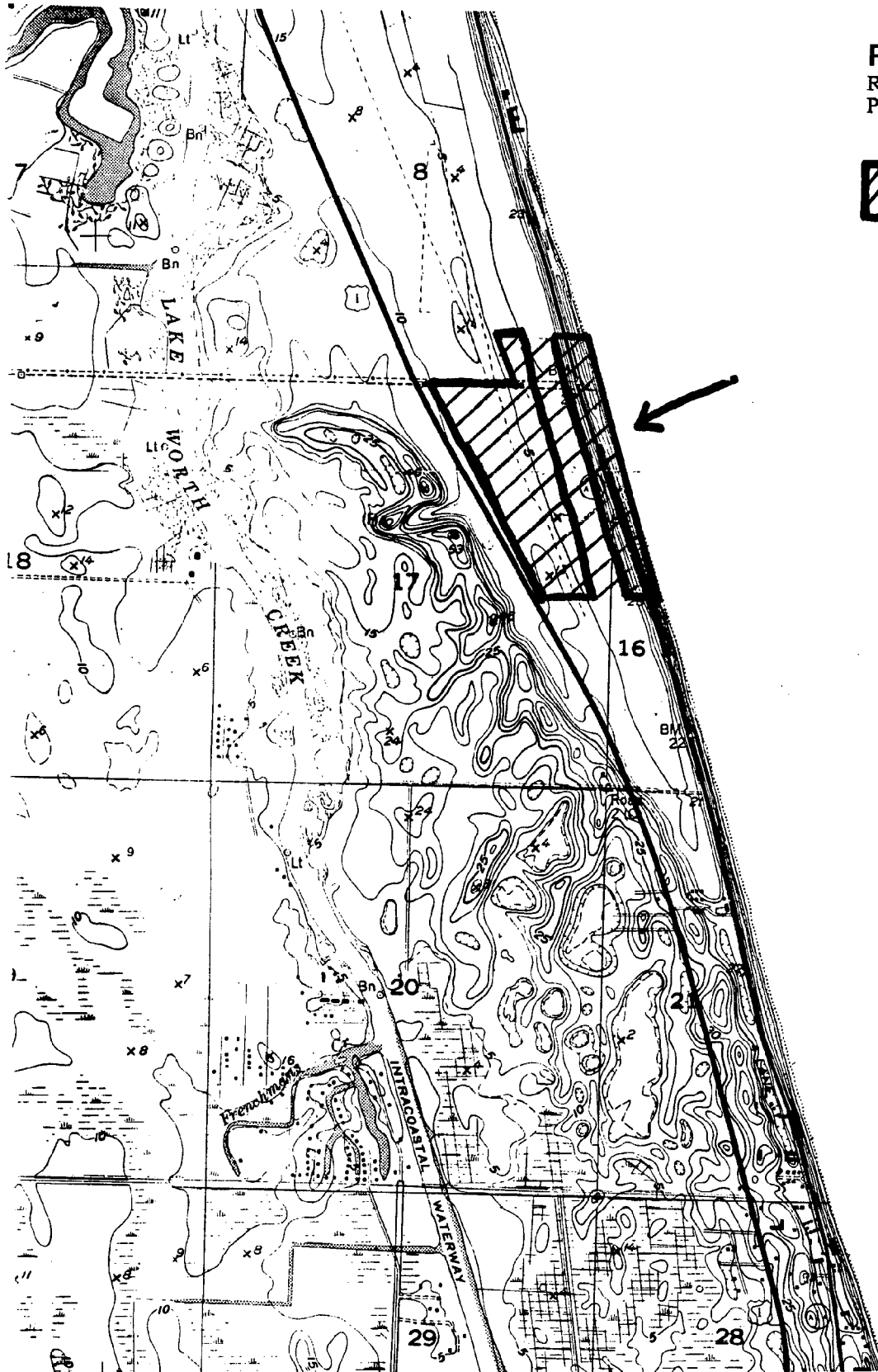
**Disturbance:** road shoulders of A1A widened for public parking; light invasion of Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*) along road.

**Surrounding land use:** natural to west (scrub extends to intracoastal waterway); residential to north and south.

**Ownership:** public: Palm Beach County (undeveloped "resource space" park).

U.S.G.S. QUAD:  
Jupiter, 1967

**PALM-4**  
Radnor Beach  
Park



## Coastal Uplands Site Summary

### **PALM-5**

#### **Loggerhead Park, Palm Beach County, Florida.**

Approximate acreage: 63

Topographic map: Jupiter

Florida D.O.T. aerial photograph: PD3523-8A-15 (4/23/86)

Survey date: 14 April 1990 (F90JOH39)

**Physical setting:** high rolling ridge reaching an elevation of 45 feet and covered by spray-pruned scrub descends seaward to tropical coastal strand and finally down a bluff to the beach. There is no lagoon between beach and mainland, but a narrow depression occupied by willow (*Salix caroliniana*), Australian pine (*Casuarina equisetifolia*) and Brazilian pepper (*Schinus terebinthifolius*) parallels A1A on its west side. Slabs of coquina rock are exposed in surf zone.

**Plant communities:** beach dune, coastal strand, scrub

**beach dune:** (B) moderately wide beach backed by 10-m-wide plateau of sea oats (*Uniola paniculata*) fronting a 10-15 ft cliff covered by seagrape (*Coccoloba uvifera*) which rises to A1A. Scattered Australian pines occur at juncture of cliff and sea oats plateau.

**coastal strand:** (A) consists of mostly low seagrape east of A1A on seaward face of cliff - killed back by freeze of December 1989; west of A1A consists of a diverse mixture of temperate and tropical shrubs, including redbay (*Persea borbonia*), Florida privet (*Forestiera segregata*), marlberry (*Ardisia escallonioides*), poisonwood (*Metopium toxiferum*), pineland croton (*Croton linearis*), and myrsine (*Rapanea punctata*). Vines of catbrier (*Smilax auriculata*) and grape (*Vitis munsoniana*) are abundant, trailing over the shrubs. Moderate invasion of Brazilian pepper west of A1A.

**scrub:** (A+) low (3-4 ft), spray-pruned shrub canopy on high ridge above the coast. Prominent shrubs are redbay (*Persea borbonia*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), and hog plum (*Ximenia americana*). Woevine (*Cassytha filiformis*) forms a heavy thatch over the top of the shrubs, but shows no sign of recovery from freeze kill of December 1989. Area is unique in that it is one of the few places in Florida where temperate scrub and tropical strand vegetation grade directly into one another without a lagoon intervening.

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - large patch along paved walkway in southeast corner of Loggerhead Park; beach star (*Remirea maritima*) - small patches near paths from A1A to beach; burrowing four o'clock (*Okenia hypogaea*) - similar to beach star; necklace pod (*Sophora tomentosa*) - 3-4 plants in strand to east and west of A1A; loggerhead turtle (*Caretta caretta*) - 212 nests/km (Hopkins and Richardson, 1984).

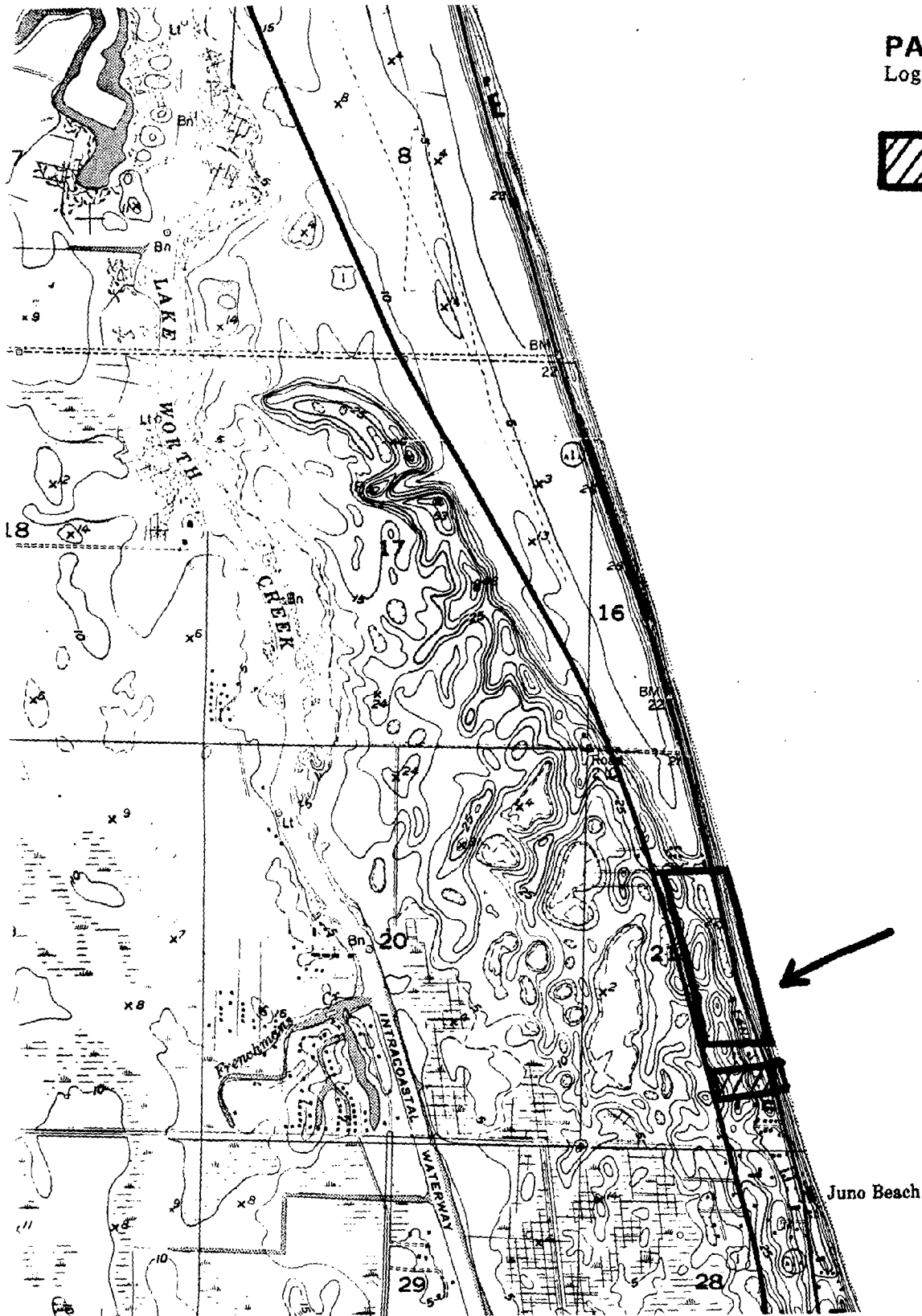
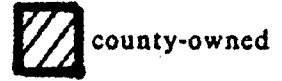
**Disturbance:** Brazilian pepper and Australian pine invasion in strand and low area parallel to A1A; building of parking lots, picnic area and playground in park.

**Surrounding land use:** natural scrub and scrubby flatwoods to west of US1 (Juno Hills CARL proposal); residential and commercial to north and south; Atlantic Ocean to east.

**Ownership:** public: Palm Beach County (Loggerhead Park) - southern half; private: (Conrad DiSantis?) - northern half.

U.S.G.S. QUAD:  
Jupiter, 1967

**PALM-5**  
Loggerhead Park



## Coastal Uplands Site Summary

### **PALM-6**

#### **MacArthur Beach State Park, Palm Beach County, Florida.**

Approximate acreage: 138

Topographic map: Riviera Beach

Florida D.O.T. aerial photograph: PD3523-9-35 (4/23/86)

Survey date: 13 April 1990 (F90JOH40)

**Physical setting:** barrier peninsula on the northeast side of Lake Worth consisting of two long parallel ridges separated by a small lagoon which connects to Lake Worth at its southern end. The outer ridge rises abruptly to 20 ft elevation near the ocean shore and slopes down to mangrove forest along the lagoon shore. The inner ridge is low (5 ft elevation), bordered by mangroves, and has a small lake at its southern end. A narrow ledge of sea oats (*Uniola paniculata*) above the beach, present in August 1986, has since been eroded away and the dune slopes up directly into the seagrape (*Coccoloba uvifera*) zone. Slabs of coquina rock are exposed in the surf zone. Yellowish sand is very shelly.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) sea oats patchy on dune slope seaward of shrubby seagrape stand. Associated species are saltgrass (*Distichlis spicata*), railroad vine (*Ipomoea pes-caprae*), alternanthera (*Alternanthera maritima*), and bitter panicum (*Panicum amarum* var *amarulum*).

**coastal strand:** (A+) dominated by shrubby seagrape (northernmost site where largely unaffected by freeze of December 1989) and bordered by spiny plants such as spanish bayonet (*Yucca aloifolia*) and prickly pear (*Opuntia stricta*) nearest the beach. Farther inland spanish stopper (*Eugenia foetida*) and snowberry (*Chiococcoa alba*) join seagrape.

**maritime hammock:** (A+) hammock occurs both in a narrow band behind the 20' dune ridge fronting the ocean and in a broader area on the lower 5 ft ridge west of the small lagoon. On the seaward ridge it is dominated by tropical trees; on the landward ridge it is mostly dominated by temperate live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*) and redbay (*Persea borbonia*) with saw palmetto (*Serenoa repens*) understory (Duever et al., 1981), but a stand of tropical hammock also occurs on the lower ridge north of the parking lots. Tropical hammock is made up of willow bustic (*Dipholis salicifolia*), strangler fig (*Ficus aurea*), pigeon plum (*Coccoloba diversifolia*), gumbo limbo (*Bursera simarouba*), and mastic (*Mastichodendron foetidissimum*). Of these, only pigeon plum showed some damage from the freeze of December 1989. Understory is primarily composed of wild coffee (*Pyschotria nervosa*), spanish stopper, and marlberry (*Ardisia escallonioides*).

**Rare species:** burrowing four o'clock (*Okenia hypogaea*) - abundant on upper beach at south end of property in 1986; few plants seen in central portion in 1990; beach star (*Remirea maritima*) - 4 large patches on the foredunes (Duever, et al., 1981); sea lavender (*Tournefortia gnaphalodes*) - one plant present on sea oats dune in 1986 has since been destroyed by erosion (Moyroud, pers. comm., 1989); hand fern (*Ophioglossum palmatum*; Iverson, 1982); loggerhead turtle (*Caretta caretta*; Duever, et al., 1981); gopher tortoise (*Gopherus polyphemus*; Duever et al., 1981).

**Disturbance:** part of tropical hammock on low inner ridge was destroyed to build park parking lot and visitor center; moderate invasion of Brazilian pepper (*Schinus terebinthifolius*)

## **Coastal Uplands Site Summary**

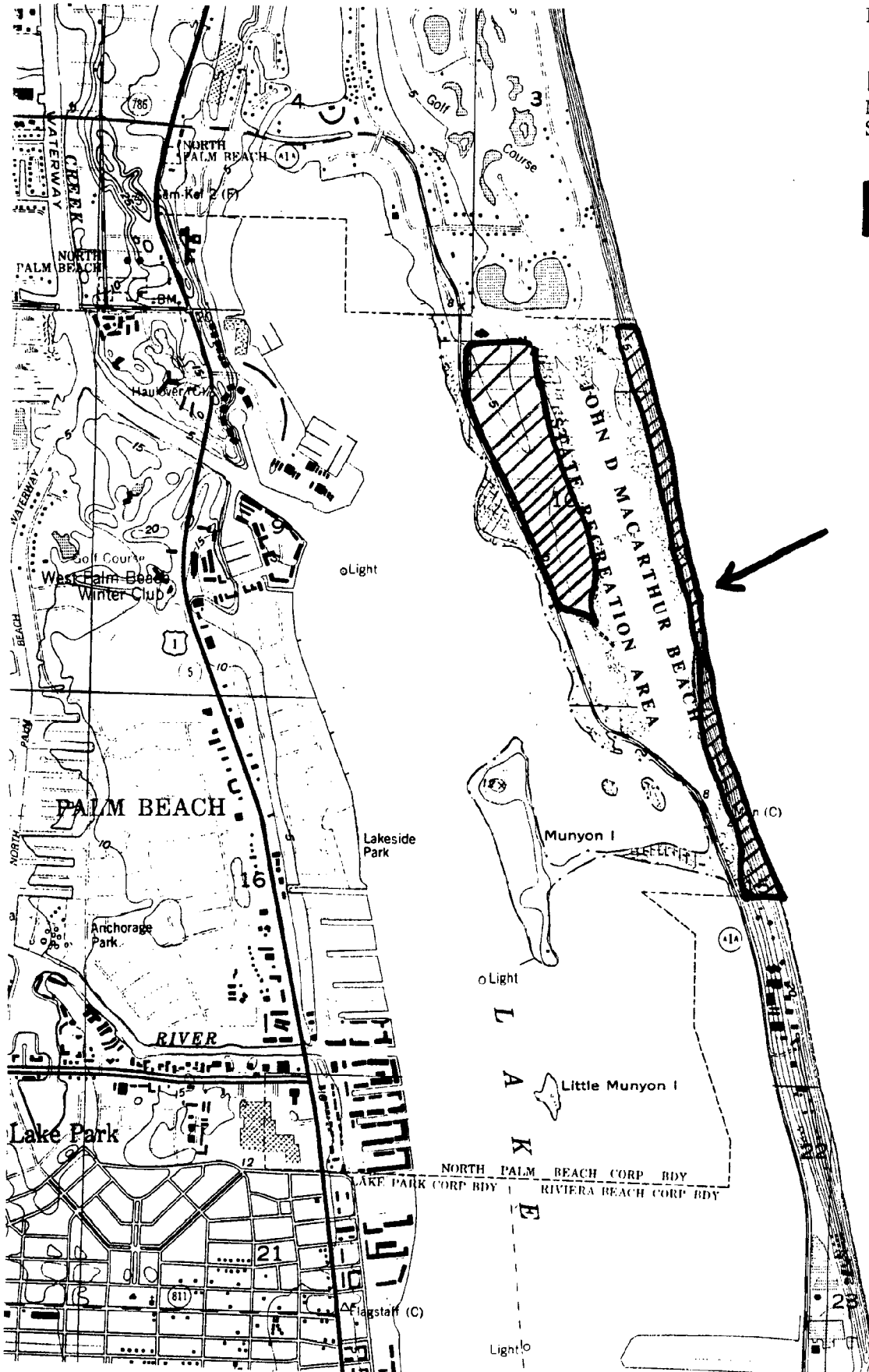
**into understory of hammocks and along mangrove fringe.**

**Surrounding land use:** urban highrise to the south; residential to north; Lake Worth to west; Atlantic Ocean to east.

**Ownership:** public: state (MacArthur Beach State Park).

U.S.G.S. QUAD:  
Riviera Beach, 1983

**PALM-6**  
MacArthur Beach  
State Park



## Coastal Uplands Site Summary

### **PALM-7**

#### **South of Southern Boulevard bridge, Palm Beach County, Florida.**

**Approximate acreage:** 6

**Topographic map:** Palm Beach

**Florida D.O.T. aerial photograph:** PD3523-9-25 (4/23/86)

**Survey date:** 15 April 1990 (F90JOH41)

**Physical setting:** small area of upland west of A1A bordered by mangroves in estate section south of Southern Boulevard.

**Plant communities:** maritime hammock

**maritime hammock:** (C) hammock of large trees consisting of as many exotic as native species. Natives include strangler fig (*Ficus aurea*), cabbage palm (*Sabal palmetto*), lancewood (*Nectandra coriacea*), and Florida privet (*Forestiera segregata*). Exotics include a species of palm, silk oak (*Grevillea robusta*), African bowstring hemp (*Sansevieria hyacinthoides*), and Australian pine (*Casuarina equisetifolia*).

**Rare species:**

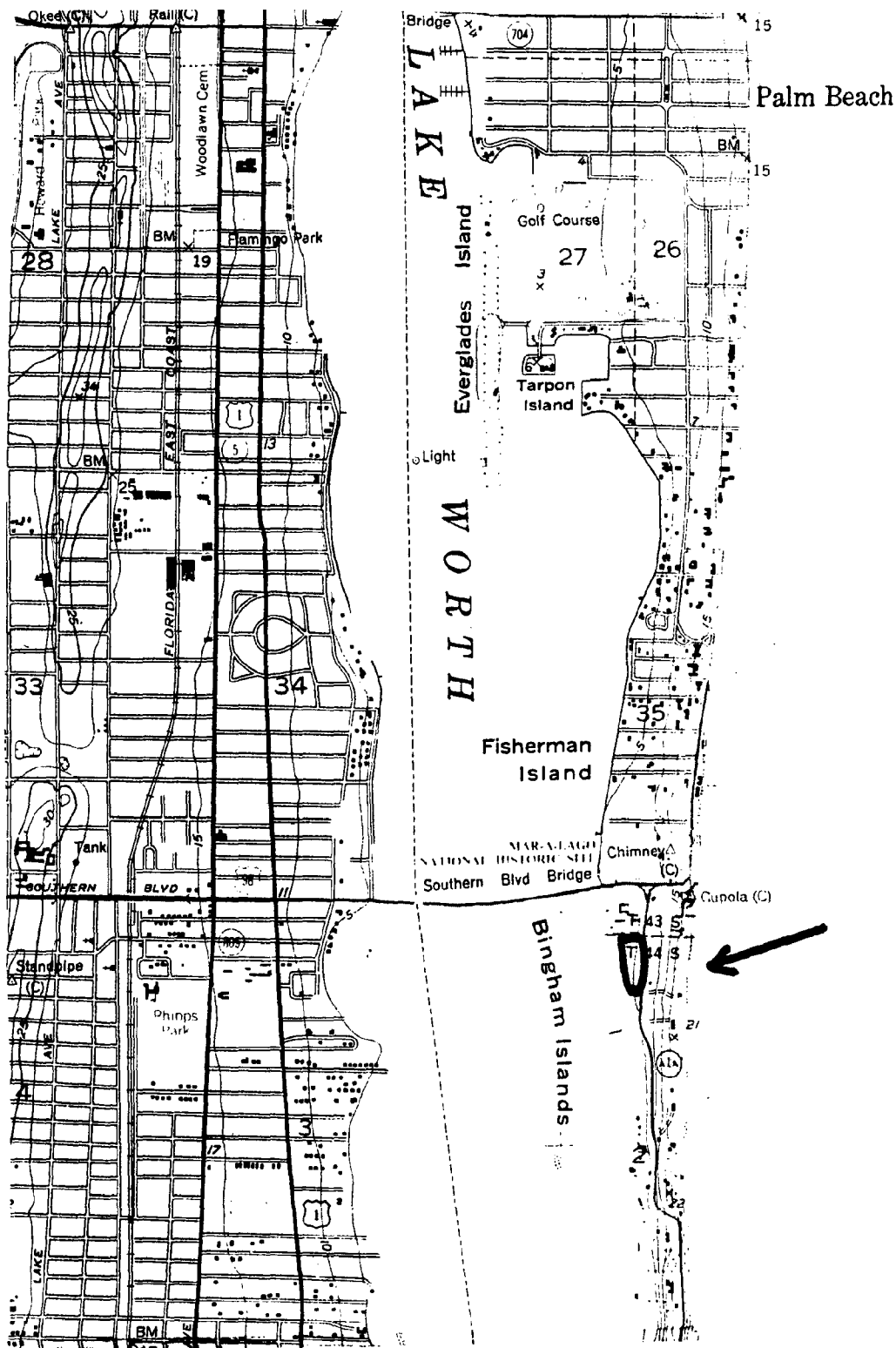
**Disturbance:** heavy invasion of exotics species both in canopy and understory layers.

**Surrounding land use:** residential to north south and east; mangroves to west.

**Ownership:** private

U.S.G.S. QUAD:  
Palm Beach, 1983

**PALM-7**  
South of Southern  
Boulevard



## Coastal Uplands Site Summary

### **PALM-8**

#### **Phipps Ocean Park, Palm Beach County, Florida.**

**Approximate acreage:** 6

**Topographic map:** Palm Beach

**Florida D.O.T. aerial photograph:** PD3523-9-23 (4/23/86)

**Survey date:** 15 April 1990 (F90JOH42)

**Physical setting:** 25-ft dune ridge rising steeply from beach and dropping off as abruptly to park parking lots east of A1A.

**Plant communities:** beach dune, coastal strand

**beach dune:** (B) low sea oats foredune at base of cliff-face ascending to 25-ft ridge. Associated species are railroad vine (*Ipomoea pes-caprae*), bitter panicum (*Panicum amarum* var *amarulum*), beach star (*Remirea maritima*), and beach elder (*Iva imbricata*).

**coastal strand:** (B) cliff-face above beach is covered by shrubby stand of seagrape (*Coccoloba uvifera*) with scattered low cabbage palms (*Sabal palmetto*). Seagrape was not killed back by December 1989 freeze as it was to north.

**Rare species:** sea lavender (*Tournefortia gnaphalodes*) - several mature plants north of the park near dune walkover to housing development (Osorio, 1989, pers comm.); broad-leaved spider lily (*Hymenocallis latifolia*) - several plants in ecotone between strand and beach dune zones; beach star (*Remirea maritima*) - scattered plants at seaward edge of sea oats dune.

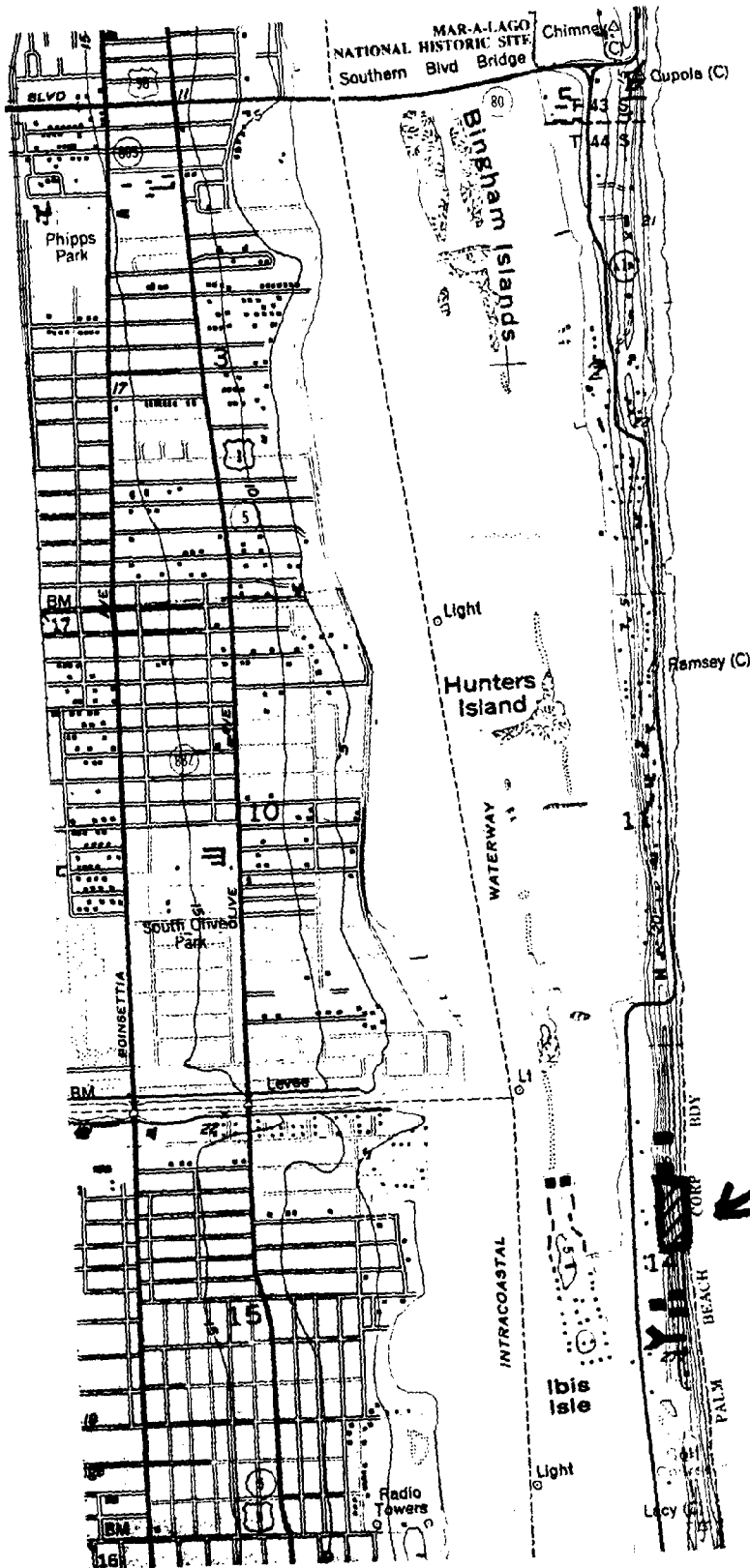
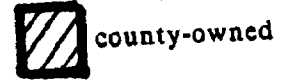
**Disturbance:** unpaved road which has been landscaped with *Vitex trifolia*, an Asian shrub known to occasionally naturalize along the coast, runs along the high ridge overlooking the ocean. Parking lots, bath houses, and grassy picnic area occupy site of former maritime hammock from which a few gumbo limbos (*Bursera simarouba*) still stand to shade picnic area.

**Surrounding land use:** urban development to north, south and west; Atlantic Ocean to east.

**Ownership:** public: Palm Beach County (developed park).

U.S.G.S. QUAD:  
Palm Beach, 1983

**PALM-8**  
Phipps Ocean  
Park



## Coastal Uplands Site Summary

### **PALM-9**

#### **Boynton Beach Park, Palm Beach County, Florida.**

**Approximate acreage:** 11

**Topographic map:** Lake Worth

**Florida D.O.T. aerial photograph:** PD3523-9-17 (4/323/86)

**Survey date:** 15 April 1990 (F90JOH43)

**Physical setting:** narrow strip of hammock (400 X 1000 ft.) on lee slope of first dune ridge between A1A and the ocean, located north of parking and bath house area of park. Erosion shown by scarp cut into foredune may be caused by sand being trapped by jetties at Boynton Inlet to north of park.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) low 50-ft-wide ledge of sea oats (*Uniola paniculata*) above beach showing increasing erosion to south. Associated species include alternanthera (*Alternanthera maritima*), sand cherry (*Physalis viscosa*), beach bean (*Canavalia maritima*), tread softly (*Cnidoscolus stimulosus*), and beach berry (*Scaevola plumieri*).

**coastal strand:** (A) shrubby stand of sea grape (*Coccoloba uvifera*) - no freeze damage from December 1989 freeze on seaward side of low (15 ft) ridge. Lee slope of ridge drops off to A1A and supports hammock. Associated species are gray nicker (*Caesalpinia bonduc*), blackbead (*Pithecellobium keyensis*), and spanish bayonet (*Yucca aloifolia*).

**maritime hammock:** (A+) tropical hammock with large diameter trees of strangler fig (*Ficus aurea*), gumbo limbo (*Bursera simarouba*), and mastic (*Mastichodendron foetidissimum*). Smaller trees are white stopper (*Eugenia axillaris*), paradise tree (*Simarouba glauca*), and poisonwood (*Metopium toxiferum*). Understory of spanish stopper (*Eugenia foetida*), marlberry (*Ardisia escallonioides*), and wild coffee (*Psychotria nervosa*; F90JOH43; Austin and Weise, 1972).

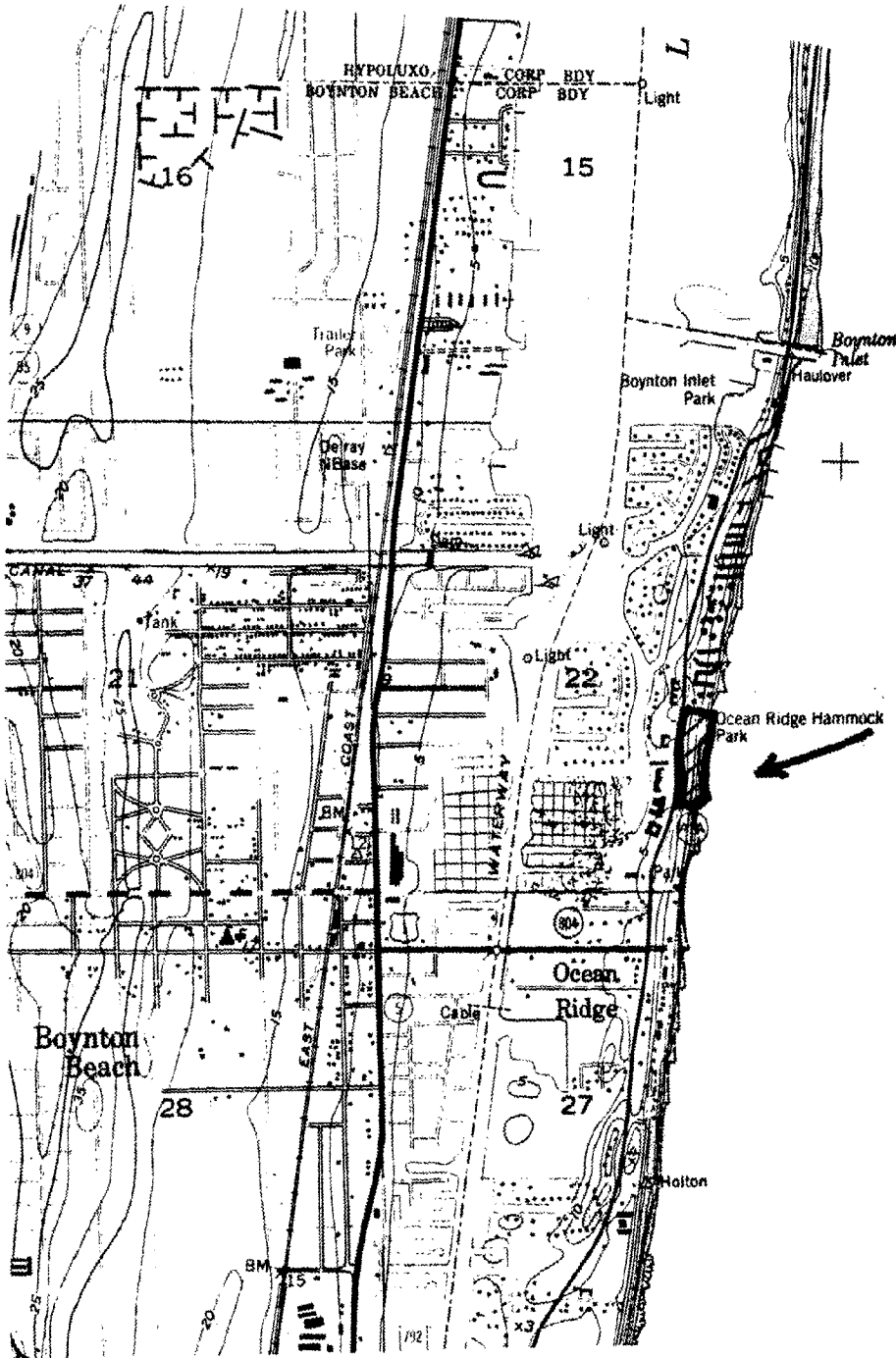
**Rare species:** golden leather fern (*Acrostichum aureum*) - plants in low area in hammock (Moyroud, 1990, pers. comm.); beach star (*Remirea maritima*) - scattered plants in upper beach; sea lavender (*Tournefortia gnaphalodes*) - shrub on dunes at north end of park (MacLaren, 1987, pers. comm.).

**Disturbance:** six small groins spaced along beach at right angles to shore to trap sand; erosion is undermining dune walkovers at park. Moderate invasion of Brazilian pepper (*Schinus terebinthifolius*) into hammock understory, especially along A1A.

**Surrounding land use:** residential (urban)

**Ownership: public:** city of Boynton Beach (named "Ocean Ridge Hammock Park" on 1983 topographic map).

**PALM-9**  
Boynton Beach  
Park



## Coastal Uplands Site Summary

### **PALM-10**

#### **Atlantic Dunes Park, Palm Beach County, Florida.**

**Approximate acreage:** 6

**Topographic map:** Delray Beach

**Florida D.O.T. aerial photograph:** PD3523-9-09 (4/23/86 - NOT SEEN)

**Survey date:** 17 April 1990 (F90JOH30)

**Physical setting:** narrow portion of the barrier island with 15-ft-ridge rising gradually from beach and descending to A1A.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) low sea oats dune dipping slightly on inland side to area covered by scattered subshrubs such as beach tea (*Croton punctatus*), beach berry (*Scaevola plumieri*), and cocoplum (*Chrysobalanus icaco*) before rising to ridge covered by hammock species. Cocoplum was killed back by freeze of December 1989.

**maritime hammock:** (B) small hammock with large cleared central area. Trees are low and dense consisting of primarily tropical species such as poisonwood (*Metopium toxiferum*), seagrape (*Coccoloba uvifera*), and wild lime (*Zanthoxylum fagara*). Shrubs and trailing species are colonizing the central cleared portion including beach creeper (*Ernodea littoralis*), beach jacquemontia (*Jacquemontia reclinata*), cabbage palm (*Sabal palmetto*), and blue curls (*Trichostema dichotomum*).

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - 5 patches in opening in hammock surrounded by nature trail; Florida lantana (*Lantana depressa*) - several plants in central cleared portion of hammock; burrowing four o'clock (*Okenia hypogaea*) - 5 plants reported on beach just north of park (Osorio, pers. comm., 1989); beach star (*Remirea maritima*) - covers acres of beach north and south of park (Osorio, pers. comm., 1989); broad-leaved spider lily (*Hymenocallis latifolia*) - several plants in ecotone between foredune and hammock; necklace pod (*Sophora tomentosa*) - several shrubs in cleared central area of hammock.

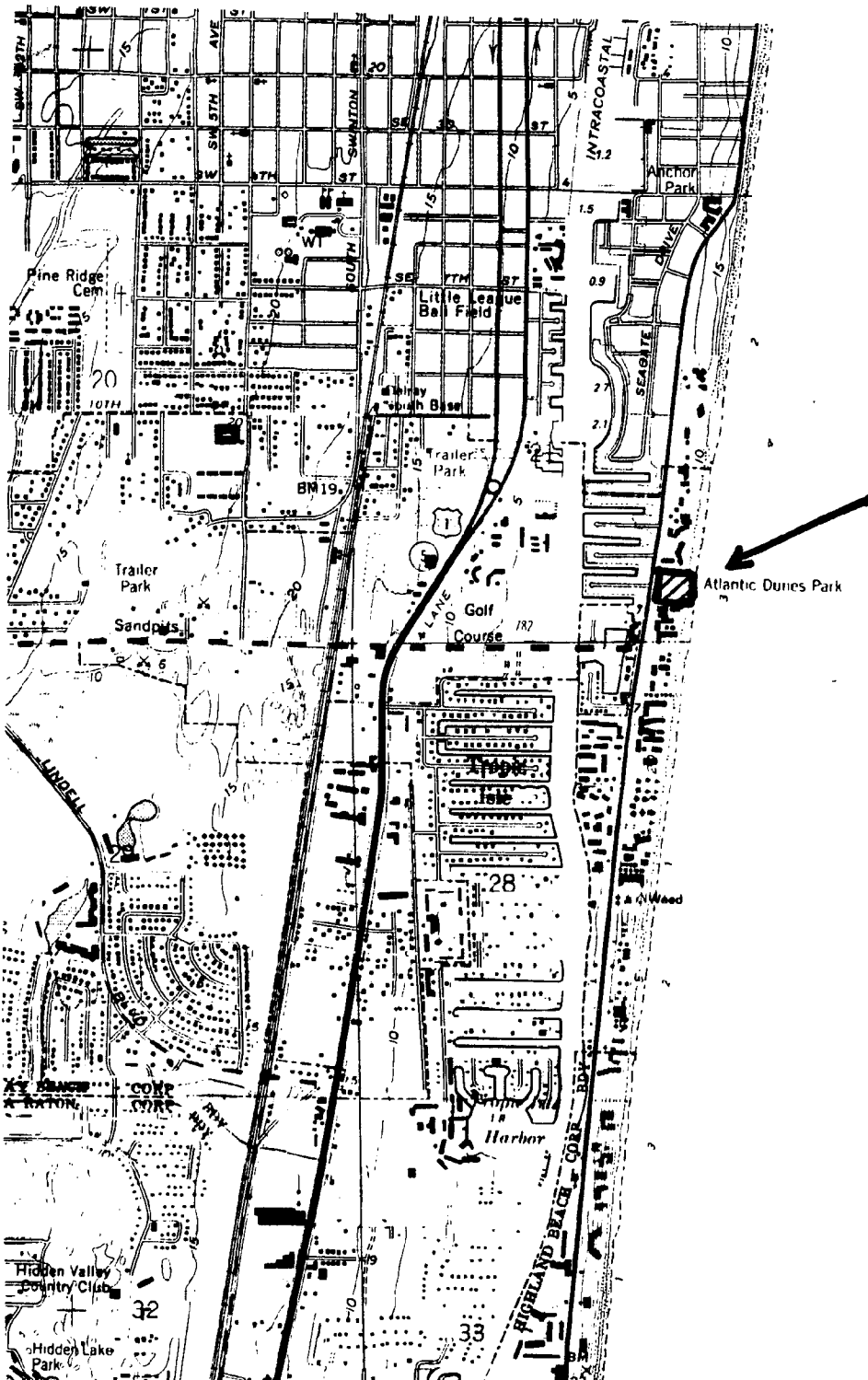
**Disturbance:** central portion of hammock has been cleared and is being re-colonized by native plants. Park bath houses take up what was a portion of the hammock area.

**Surrounding land use:** residential to north and south; A1A and beach parking to west; Atlantic Ocean to east.

**Ownership:** public: city of Delray Beach

U.S.G.S. QUAD:  
Delray Beach, 1983

**PALM-10**  
Atlantic Dunes  
Park



## **PALM-11**

### **Spanish River Park, Palm Beach County, Florida.**

**Approximate acreage:** 15

**Topographic map:** Delray Beach

**Florida D.O.T. aerial photograph:** PD3523-9-07 (4/23/86)

**Survey date:** 6 December 1990 (F90JOH88)

**Physical setting:** steep, 20-ft ridge above beach east of A1A.

**Plant communities:** beach dune, coastal strand

**beach dune:** (C) patches of grassy vegetation at base of steep slope. Common species include seashore paspalum (*Paspalum distichum*), sea oats (*Uniola paniculata*), and spurge (*Chamaesyce mesembryanthemifolia*).

**coastal strand:** (C) solid stand of shrubby sea grape (*Coccoloba uvifera*) with scattered plants of bay cedar (*Suriana maritima*) and patches of pure exotic beach berry (*Scaevola taccada*) near tunnel underpasses.

**maritime hammock:** zone now occupied by monospecific stand of tall Australian pines (*Casuarina equisetifolia*).

**Rare species:** coastal vervain (*Glandularia maritima*) - specimen collected by Correll, 1978 and deposited in herbarium of Fairchild Tropical Garden; loggerhead turtle (*Caretta caretta*) - 112 nests/km (Hopkins and Richardson, 1984).

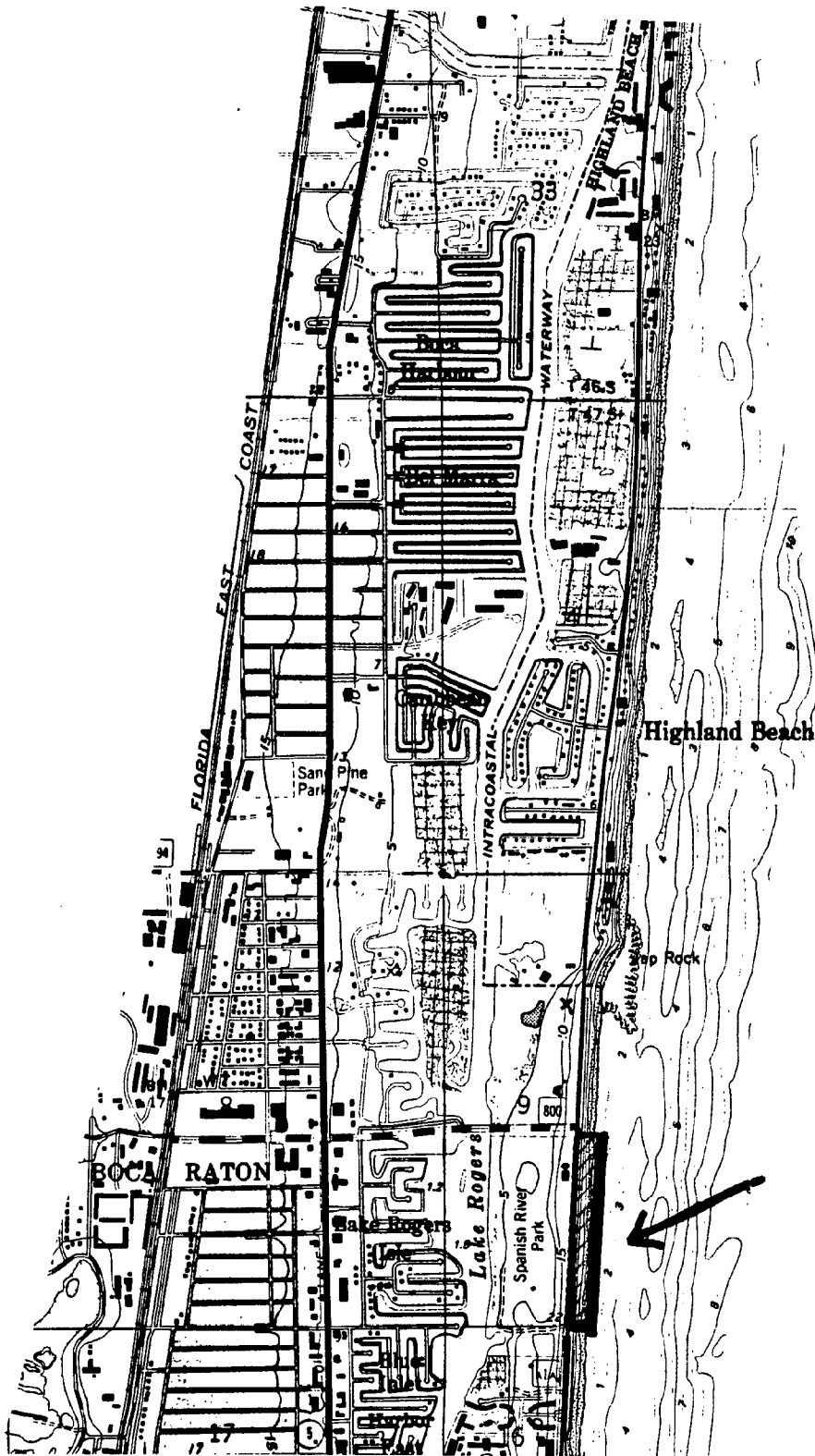
**Disturbance:** heavy trampling on beach (volleyball nets) may affect colonization by beach pioneers; invasion of exotic beach berry near tunnel underpasses; replacement of native hammock west of A1A by Australian pine.

**Surrounding land use:** urban

**Ownership:** public: city of Boca Raton

U.S.G.S. QUAD:  
Delray Beach, 1983

**PALM-11**  
Spanish River  
Park



## Coastal Uplands Site Summary

### **PALM-12**

#### **Gumbo Limbo Nature Center, and Red Reef Park, Palm Beach County, Florida.**

**Approximate acreage:** 40

**Topographic map:** Boca Raton

**Florida D.O.T. aerial photograph:** PD3523-9-05 (4/23/86)

**Survey date:** 15 and 17 April 1990 (F90JOH44)

**Physical setting:** narrow barrier island 1000 ft wide descending gradually to lagoon from steeply rising 25-ft ridge near the Atlantic Ocean. Groins built along shore to stem beach erosion.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) narrow band of sea oats at base of steep cliff above beach.

**coastal strand:** (B) steep cliff face above beach covered by a shrubby stand of seagrape (*Coccoloba uvifera*) and saw palmetto (*Serenoa repens*).

**maritime hammock:** (A+) diverse and undisturbed tropical hammock with well-developed over and understory structure. Canopy trees include gumbo limbo (*Bursera simarouba*), inkwood (*Exothea paniculata*), pigeon plum (*Coccoloba diversifolia*), mastic (*Mastichodendron foetidissimum*), paradise tree (*Simarouba glauca*), strangler fig (*Ficus aurea*), and poisonwood (*Metopium toxiferum*). Understory trees include spanish stopper (*Eugenia foetida*), white stopper (*Eugenia axillaris*), wild lime (*Zanthoxylum fagara*), and torchwood (*Amyris elemifera*). Invasion of the exotics, Australian pine (*Casuarina equisetifolia*) and Brazilian pepper (*Schinus terebinthifolius*) confined to fringe above the mangrove zone. No damage from the freeze of December 1989 seen.

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) was reported for this area (Austin and Coleman-Marois, 1977) but was not found in 1990 survey (F90JOH44). Possibly the construction of parking lots for Red Reef Park east of A1A destroyed the populations; loggerhead turtle (*Caretta caretta*) - 66 nests/km (Hopkins and Richardson, 1984).

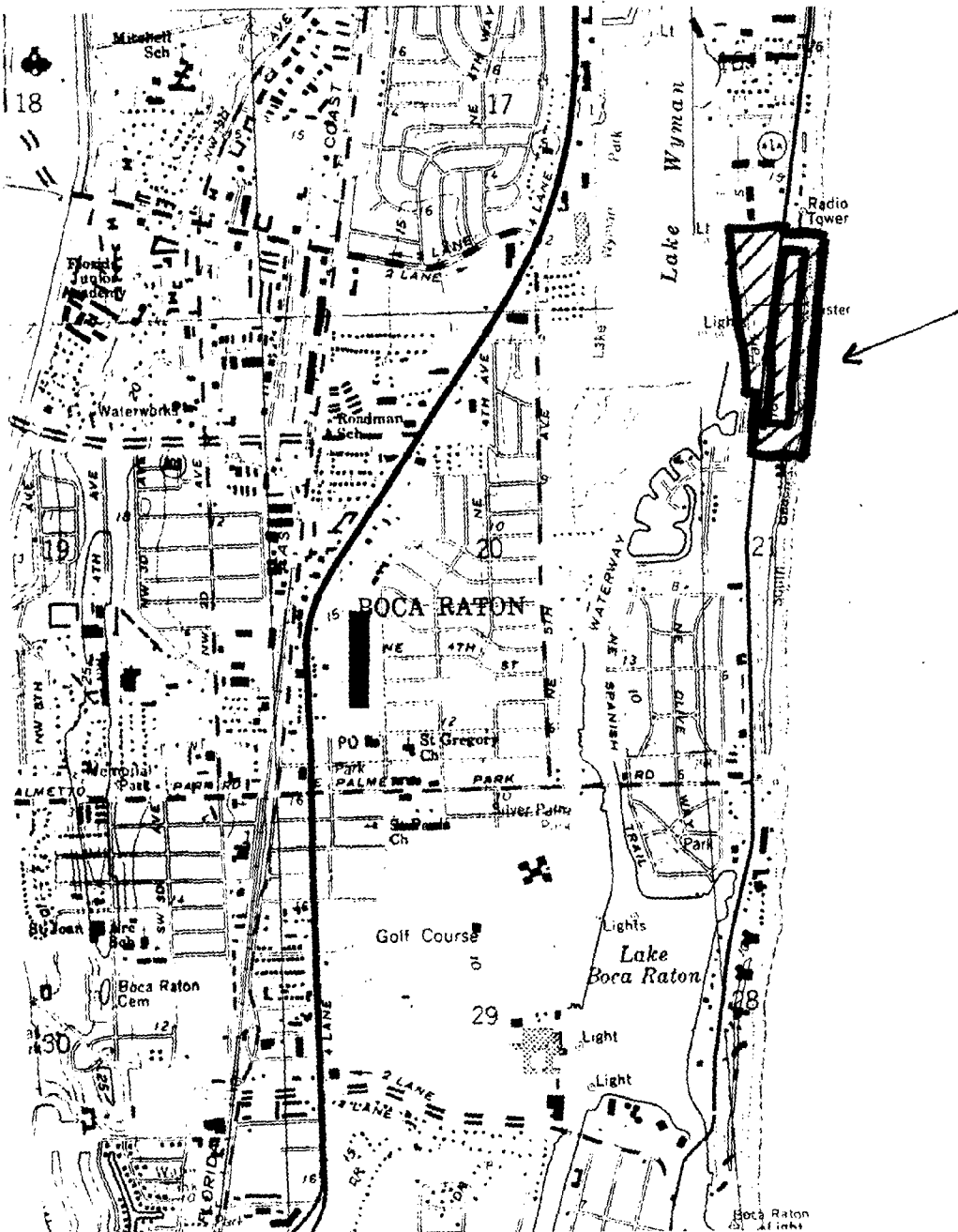
**Disturbance:** construction of parking lots and bath houses for Red Reef Park and visitor center, parking lot, boardwalk and overlook tower at Gumbo Limbo nature center; moderate invasion Australian pine and Brazilian pepper along the fringe of the mangrove zone.

**Surrounding land use:** residential to south; commercial to north; intracoastal waterway and Lake Wyman to west; Atlantic Ocean to east.

**Ownership:** public: city of Boca Raton - Gumbo Limbo Nature Center is leased to the Palm Beach County school system.

U.S.G.S. QUAD:  
Boca Raton, 1983

**PALM-12**  
Gumbo Limbo  
Nature Center



## **PALM-13**

### **South Beach Park, Palm Beach County, Florida.**

**Approximate acreage:** 30

**Topographic map:** Boca Raton

**Florida D.O.T. aerial photograph:** PD3523-9-05 (4/23/86)

**Survey date:** 6 December 1990 (F90JOH89)

**Physical setting:** steep, narrow ridge, ca 15 ft high, above beach and east of A1A

**Plant communities:** beach dune, coastal strand

**beach dune:** (C) fairly broad beach but no sea oats dune at base of slope

**coastal strand:** (B) patches of native strand forming hedge-like stands along parking lot, interpolated between areas of Australian pine (*Casuarina equisetifolia*). Major components of the strand are blackbead (*Pithecellobium keyensis*), marlberry (*Ardisia escallonioides*), and sea grape (*Coccoloba uvifera*).

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - relatively large population in good flower in grassy clearing in strand at north end of parking area; devil's shoestring (*Tephrosia angustissima*; U.S. Fish and Wildlife Service, 1980); loggerhead turtle (*Caretta caretta*) - 66 nests/km (Hopkins and Richardson, 1984).

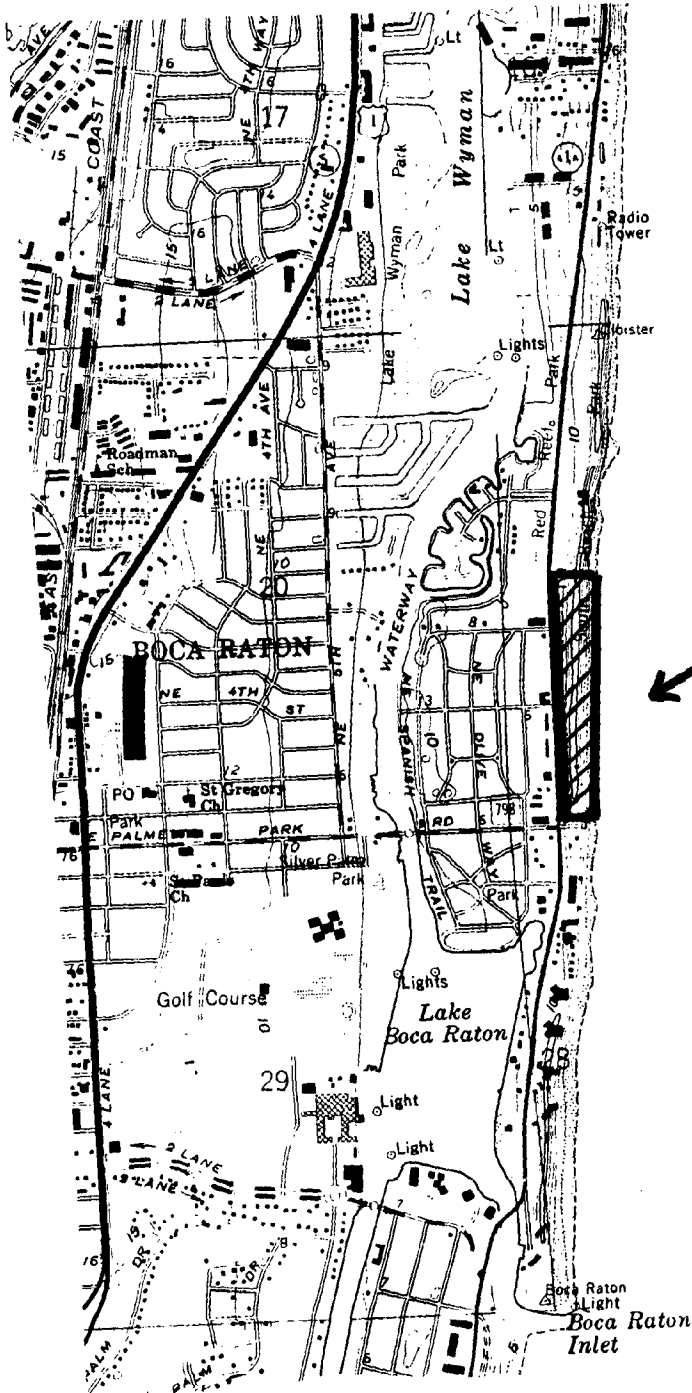
**Disturbance:** parking lot for park place in strand/hammock transition zone - Australian pine invasion around its edges.

**Surrounding land use:** urban

**Ownership:** public: city of Boca Raton

U.S.G.S. QUAD:  
Boca Raton, 1983

**PALM-13**  
South Beach  
Park



## **BROW-1**

### **Hillsboro Beach Estates, Broward County, Florida.**

**Approximate acreage:** 40

**Topographic map:** Boca Raton

**Florida D.O.T. aerial photograph:** PD3631-12-10 (2/26/88)

**Survey date:** 7 December 1990 (F90JOH90)

**Physical setting:** steep narrow dune ridge above beach and east of A1A.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) sea oats (*Uniola paniculata*) ledge backed by sea grape (*Coccoloba uvifera*) slope to crest of ridge. Locally common species with sea oats are beach star (*Remirea maritima*) and beach dropseed (*Sporobolus virginicus*).

**coastal strand:** (C) sea grape on seaward face of ridge. Transition to hammock obscured by houses or clearing.

**maritime hammock:** (A/B) diverse tropical hammock with 35-40 ft canopy composed of sea grape, mastic (*Mastichodendron foetidissimum*), gumbo limbo (*Bursera simarouba*) and well-developed understory layer of spanish stopper (*Eugenia foetida*), blolly (*Guapira discolor*), lancewood (*Nectandra coriacea*). Ground layer covered by an exotic vining *Philodendron* sp. which climbs up the tree trunks.

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - one plant seen in cleared central section of north hammock; beach star (*Remirea maritima*) - large patch in sea oats zone of northern parcel; silver palm (*Coccothrinax argentata*) - rare in hammock understory, ca 3 ft tall; loggerhead turtle (*Caretta caretta*) - 28 nests/km (Hopkins and Richardson, 1984).

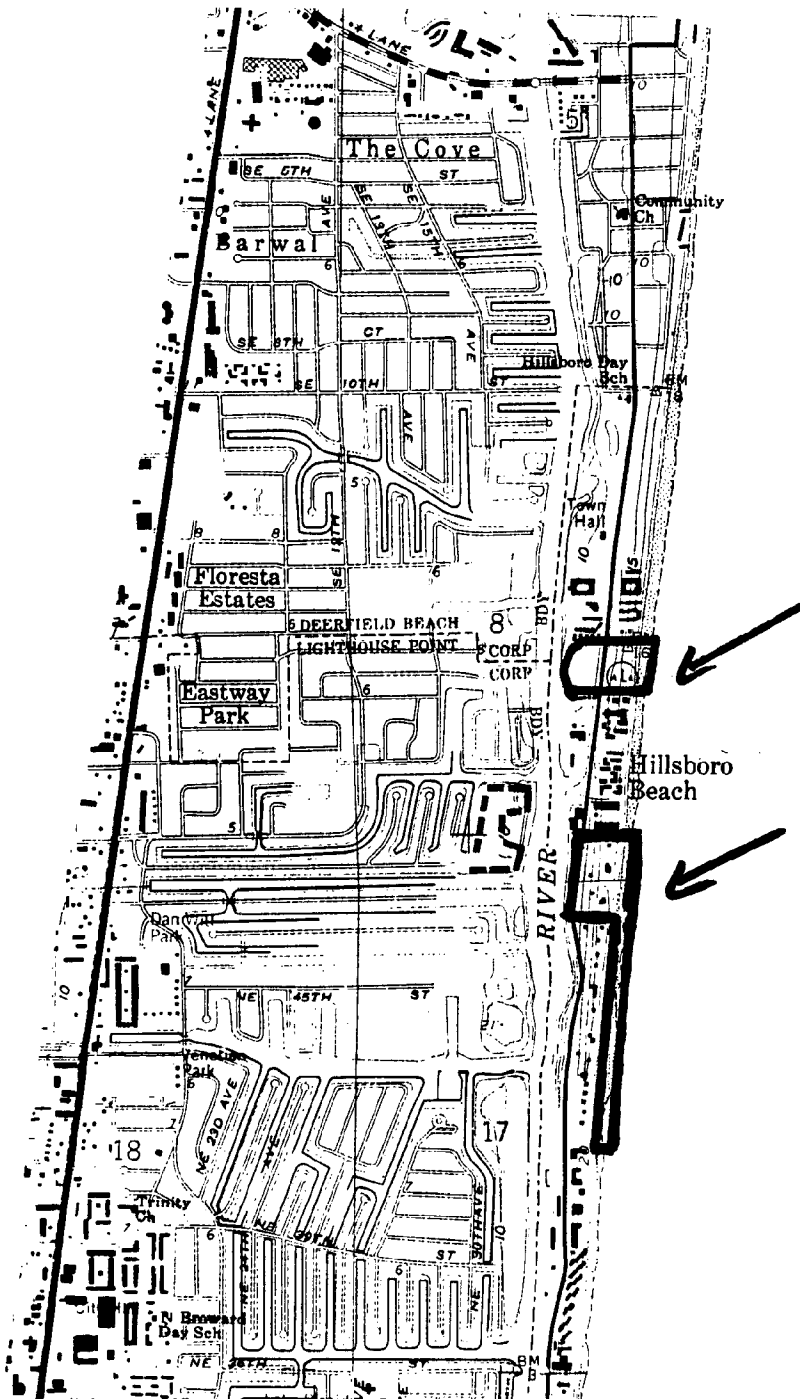
**Disturbance:** clearing and burning of central portion of hammock in northern piece; invasion of exotic *Philodendron* sp. in ground layer of south piece may inhibit reproduction of the native trees by preventing seedling establishment. Also scattered invasion of exotic tropical trees in this portion e.g. West Indian almond (*Terminalia catappa*).

**Surrounding land use:** residential

**Ownership:** private.

U.S.G.S. QUAD:  
Boca Raton, 1983

**BROW-1**  
Hillsboro Beach



## Coastal Uplands Site Summary

### BROW-2

#### Hugh Taylor Birch State Recreation Area, Broward County, Florida.

Approximate acreage: 65

Topographic map: Pompano Beach

Florida D.O.T. aerial photograph: PD3631-11-12 (2/26/88)

Survey date: 15 April 1990 (F90JOH29)

**Physical setting:** 2000-ft-wide barrier separated from the mainland by only the narrow intracoastal waterway and sloping gradually upward to an elevation of 15 ft near its center. Surrounding barrier island developed as part of urban Fort Lauderdale. A1A runs close to the ocean between the foredune and the stable hammock area, displacing what would be the strand zone.

**Plant communities:** beach dune, maritime hammock

**beach dune:** (C) patchy sea oats (*Uniola paniculata*) - heavily trampled by swimmers and sunbathers.

**maritime hammock:** (A+) mature tropical hammock dominated by mastic (*Mastichodendron foetidissimum*), seagrape (*Coccoloba uvifera*), strangler fig (*Ficus aurea*) and paradise tree (*Simarouba glauca*) occupies the southeast corner of the park at the nature trail and continues northward fringing the eastern leg of the loop road through the park; young hammock (20 ft), dominated by cabbage palm (*Sabal palmetto*), blolly (*Guapira discolor*), spanish stopper (*Eugenia foetida*) and gumbo limbo (*Bursera simarouba*), fringes the southeast leg of the loop road; a small stand of live oak (*Quercus virginiana*) and cabbage palm occurs at the southwest end of the loop road.

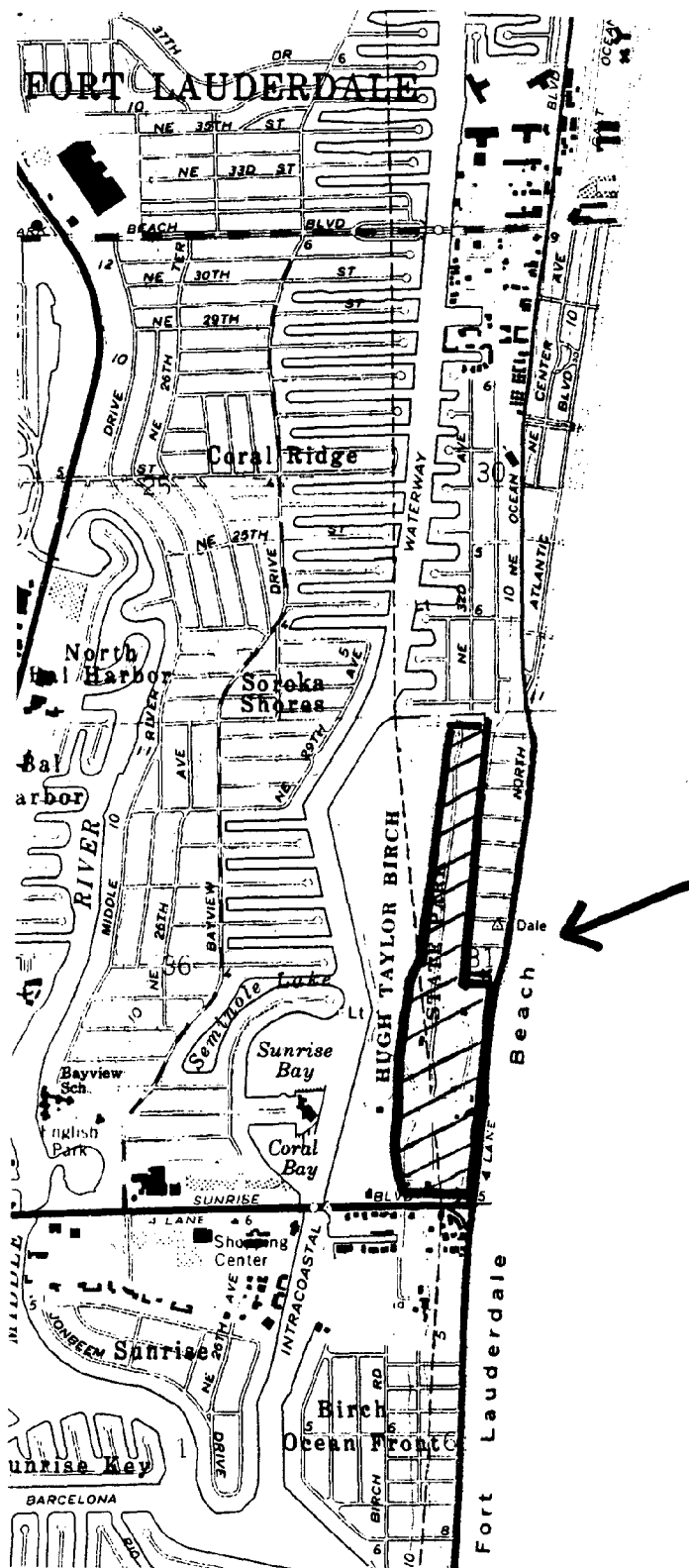
**Rare species:** silver palm (*Coccothrinax argentata*) - tropical hammock west of main park road (specimen collected by Steinberg in 1976 and deposited in the herbarium of Florida Atlantic University); beach jacquemontia (*Jacquemontia reclinata*) - disturbed area north of garden center (Buckley and Hendrickson, 1983; Hendrickson, 1990); Biscayne prickly ash (*Zanthoxylum coriaceum*) - scattered plants in dense scrubby hammock in southeast portion of park (Hendrickson, 1990; Buckley and Hendrickson, 1983); plus the following plants in the species list by Buckley and Hendrickson (1983): golden leather fern (*Acrostichum aureum*), broad-leaved spider lily (*Hymenocallis latifolia*), burrowing four o'clock (*Okenia hypogaea*), beach star (*Remirea maritima*), necklace pod (*Sophora tomentosa*), and banded wild pine (*Tillandsia flexuosa*); loggerhead turtle (*Caretta caretta*) - 28 nests/km (Hopkins and Richardson, 1984); gopher tortoise (*Gopherus polyphemus*; Diemer, pers. comm., no date).

**Disturbance:** the interior and west side of the park bordering the intracoastal waterway is entirely covered by a pure stand of Australian pine (*Casuarina equisetifolia*). Steinberg (1980), using 1940 aerial photography, maps these areas as originally in mangrove. Northwest corner of park is a large grassy area developed as a playground and picnic area. Park is heavily used for recreation.

**Surrounding land use:** urban development to north and south; shipping channel to west; A1A and Atlantic Ocean to east.

**Ownership:** public: state (State Recreation Area)

**BROW-2**  
Hugh Taylor Birch  
State Recreation  
Area



## Coastal Uplands Site Summary

### **BROW-3**

#### **Bartlett Estate, Broward County, Florida.**

**Approximate acreage:** 11

**Topographic map:** Pompano Beach

**Florida D.O.T. aerial photograph:** PD3631-11-12 (2/26/88)

**Survey date:** 7 December 1990 (F90JOH91)

**Physical setting:** low, broad coastal ridge inland from the beach and separated from it by A1A.

**Plant communities:** maritime hammock

**maritime hammock:** (A+) well-developed tropical hammock with 60 ft canopy composed of a diverse mixture of tropical trees including gumbo limbo (*Bursera simarouba*), paradise tree (*Simarouba glauca*), sea grape (*Coccoloba uvifera*), mastic (*Mastichodendron foetidissimum*). Principal understory trees were spanish stopper (*Eugenia foetida*), Guiana-plum (*Drypetes lateriflora*), wild lime (*Zanthoxylum fagara*), wild coffee (*Pyschotria nervosa*), and occasionally, silver palm (*Coccothrinax argentata*).

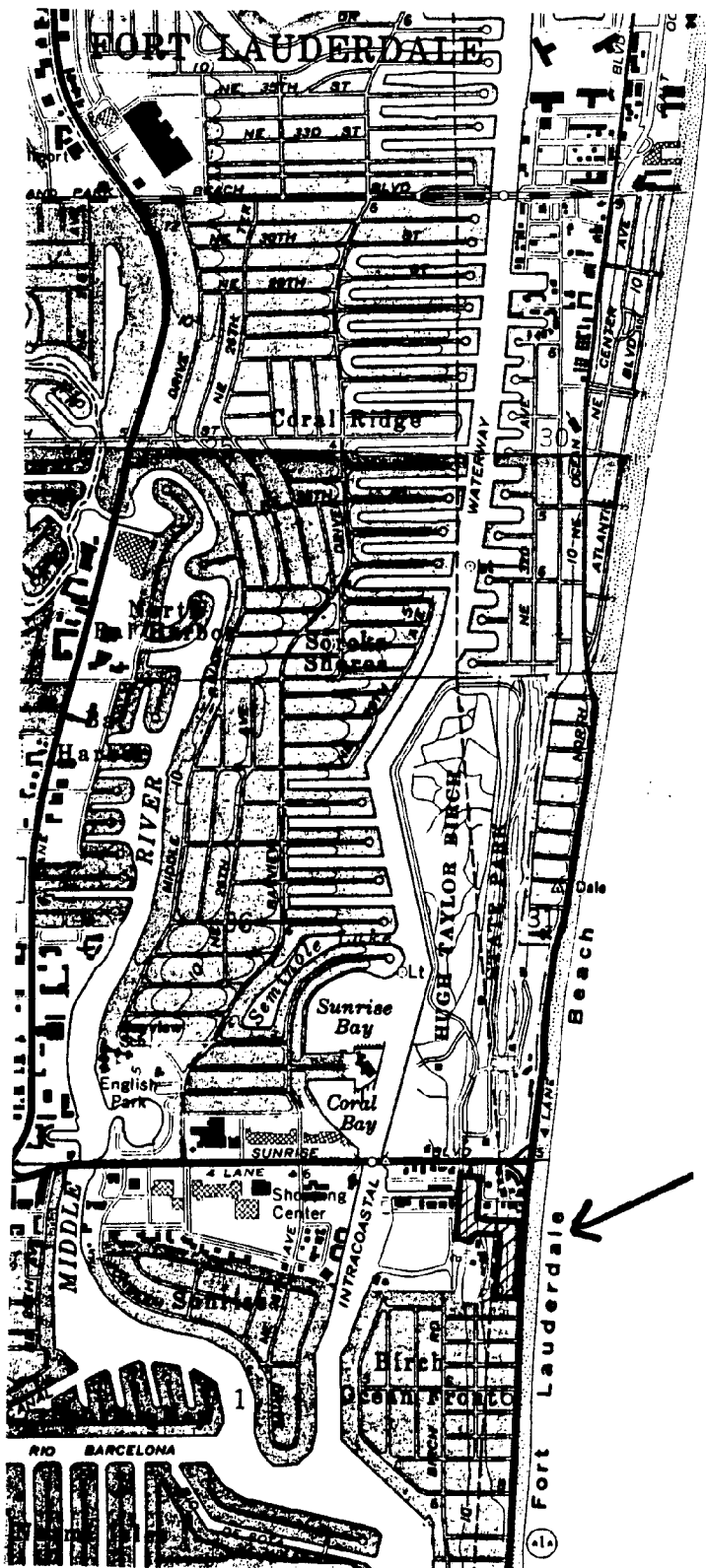
**Rare species:** silver palm (*Coccothrinax argentata*) - rare in hammock understory.

**Disturbance:** Connections of this fine hammock to strand and dune communities cut off by construction of A1A; slight amount of exotic invasion in understory (*Carica papaya*, *Rheo* sp.). Western portion of estate planted to fruit trees and landscaped.

**Surrounding land use:** urban

**Ownership:** public: state (Historic Site)

**BROW-3**  
Bartlett Estate



## Coastal Uplands Site Summary

### BROW-4

#### John U. Lloyd Beach State Recreation Area, Broward County, Florida.

Approximate acreage: 92

Topographic map: Port Everglades

Florida D.O.T. aerial photograph: PD3631-11-09 (2/26/88)

Survey date: 17 April 1990 (F90JOH28)

**Physical setting:** 1000-ft wide barrier island with maximum elevations of less than 10 ft above sea level, cut in half for most of its length by N-S running Dania Sound which connects at both its north and south ends to the intracoastal waterway. Most of width of island made up of mangrove stands.

**Plant communities:** beach dune, maritime hammock

**beach dune:** (A+) (re-nourished?) sea oats dune well-developed near south end; patchy at north end where beach colonized instead by a mixture of grasses and herbs including alternanthera (*Alternanthera maritima*), beach tea (*Croton punctatus*), seashore paspalum (*Paspalum distichum*), railroad vine (*Ipomoea pes-caprae*), and sea purslane (*Sesuvium portulacastrum*). At south end, a broad plateau of sea oats dune supports a diversity of species including beach spurge (*Chamaesyce mesembryanthemifolia*), beach star (*Remirea maritima*), beach sunflower (*Helianthus debilis*), and bay cedar (*Suriana maritima*).

**maritime hammock:** (A) small tropical hammock north of central parking lot near lagoon walkovers with nature trail through it. Dominant species are strangler fig (*Ficus aurea*), seagrape (*Coccoloba uvifera*), blolly (*Guapira discolor*), and lancewood (*Nectandra coriacea*).

**Rare species:** broad-leaved spider-lily (*Hymenocallis latifolia*; Buckley and Hendrickson, 1985); burrowing four o'clock (*Okenia hypogaea*) - few small plants on beach near northernmost parking lot; beach star (*Remirea maritima*) - covers acres of beach behind the foredunes in the vicinity of the walkover bridges across Dania Sound from beach parking; necklace pod (*Sophora tomentosa*; Buckley and Hendrickson, 1985); sea lavender (*Tournefortia gnaphalodes*) - one plant seen on beach was partly dead; loggerhead turtle (*Caretta caretta*) - 28 nests/km (Hopkins and Richardson, 1984).

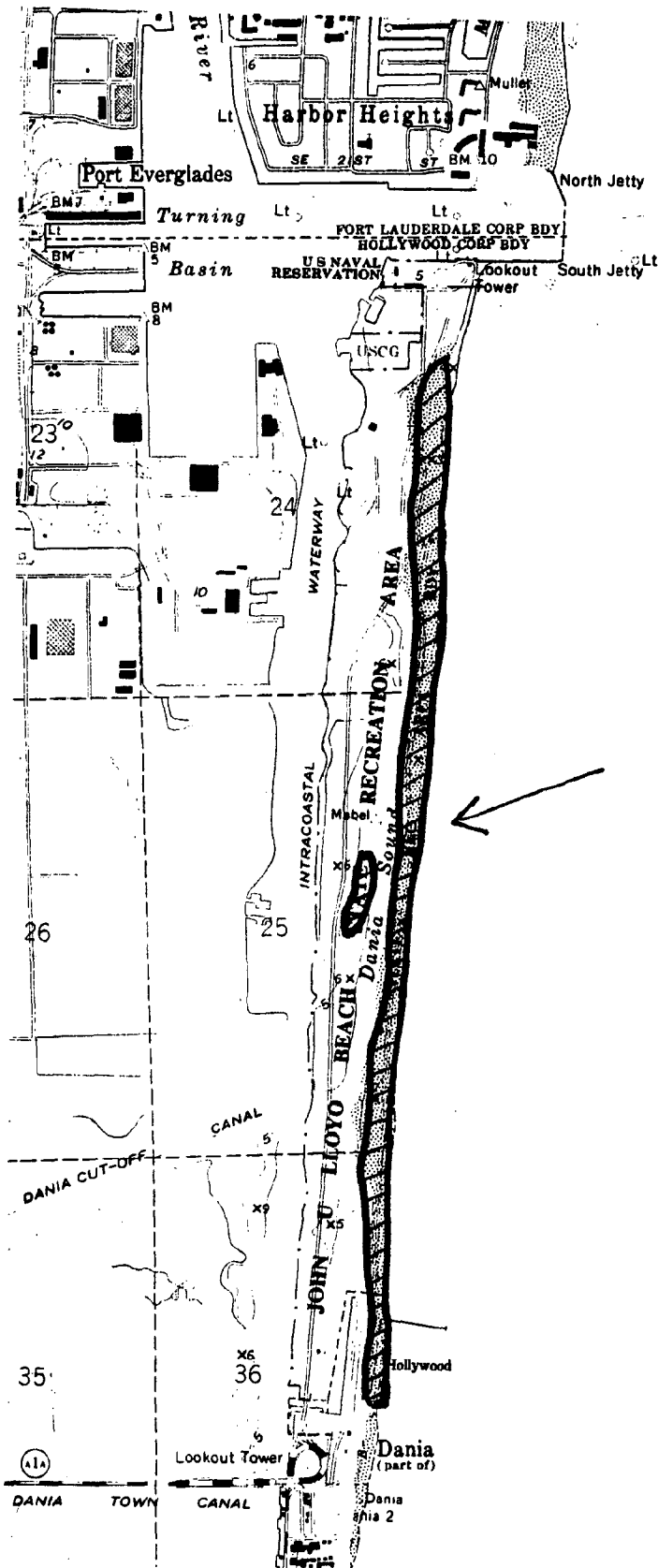
**Disturbance:** from 1940 aerial photography Steinberg (1980) mapped native strand vegetation behind the foredune - this has largely been replaced by the exotic Australian pine (*Casuarina equisetifolia*); beach parking was situated in the small area of tropical hammock that he mapped from the same period. Scattered shrubs of the exotic beach berry (*Scaevola sericea*) have colonized the sea oats zone.

**Surrounding land use:** Naval reserve to north; intracoastal waterway and shipping channel to west; residential to south; Atlantic Ocean to east.

**Ownership:** public: state (State Recreation Area)

U.S.G.S. QUAD:  
Port Everglades, 1983

**BROW-4**  
John U. Lloyd  
State Recreation  
Area



## Coastal Uplands Site Summary

### BROW-5

#### Posner tract and North Beach County Park, Broward County, Florida

Approximate acreage: 45

Topographic map: Port Everglades

Florida D.O.T. aerial photograph: PD3631-11-07 (2/26/88)

Survey date: 7 December 1990 (F90JOH92)

**Physical setting:** low (5-ft) beach area ca 0.3 mi wide fronting low, swampy coastline, with intracoastal waterway threading through broad mangrove areas. The Posner tract has pioneer beach grasses covering a backdune area that normally would support woody strand vegetation. This was apparently removed at some point. The normal zonation is present at North Beach County Park, 0.25 mi south, although this vegetation has been cut into square parcels by about 9 roads at right angles to the shore.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) has expanded inland at the Posner tract and been all but eliminated by erosion at North Beach County Park. Posner tract is dominated by the dune grasses, sea oats (*Uniola paniculata*) and bitter panicum (*Panicum amarulum*), with a large patch of beach star (*Remirea maritima*) in the center.

**coastal strand:** (A) present at North Beach County Park and eliminated (by scraping?) at Posner tract. Dense shrubs with canopy height grading upward from 3 ft at coast where stand is dominated by saw palmetto (*Serenoa repens*) to 15 ft inland with a mixed stand of shrubs, such as the tropical blackbead (*Pithecellobium keyensis*), and dwarfed trees of sea grape (*Coccoloba uvifera*), blolly (*Guapira discolor*), and gumbo limbo (*Bursera simarouba*). Moderate invasion of the exotic Brazilian pepper (*Schinus terebinthifolius*).

**maritime hammock:** (A) (McAdam and Sulser, 1988) - inland from strand and grading imperceptibly into it with the same species which have grown tall enough to change the aspect from a dense hedge-like stand to a forest with distinct canopy and understory layer.

**Rare species:** Posner tract: Beach star (*Remirea maritima*) - covering large area in center; burrowing four o'clock (*Okenia hypogaea*; Hendrickson, 1989); Florida lantana (*Lantana depressa* var *floridana*) - one plant plus several hybrids with *L. camara*. North Beach County Park: Silver palm (*Coccothrinax argentata*; McAdam and Sulser, 1988); plus several species reported by Hendrickson and Buckley, 1986: beach star, burrowing four o'clock, and broad-leaved spiderlily (*Hymenocallis latifolia*); loggerhead turtle (*Caretta caretta*) - 28 nests/km (Hopkins and Richardson, 1984). N.B. this park has disturbed strand habitat suitable for introduction of the endangered beach jacquemontia (*Jacquemontia reclinata*).

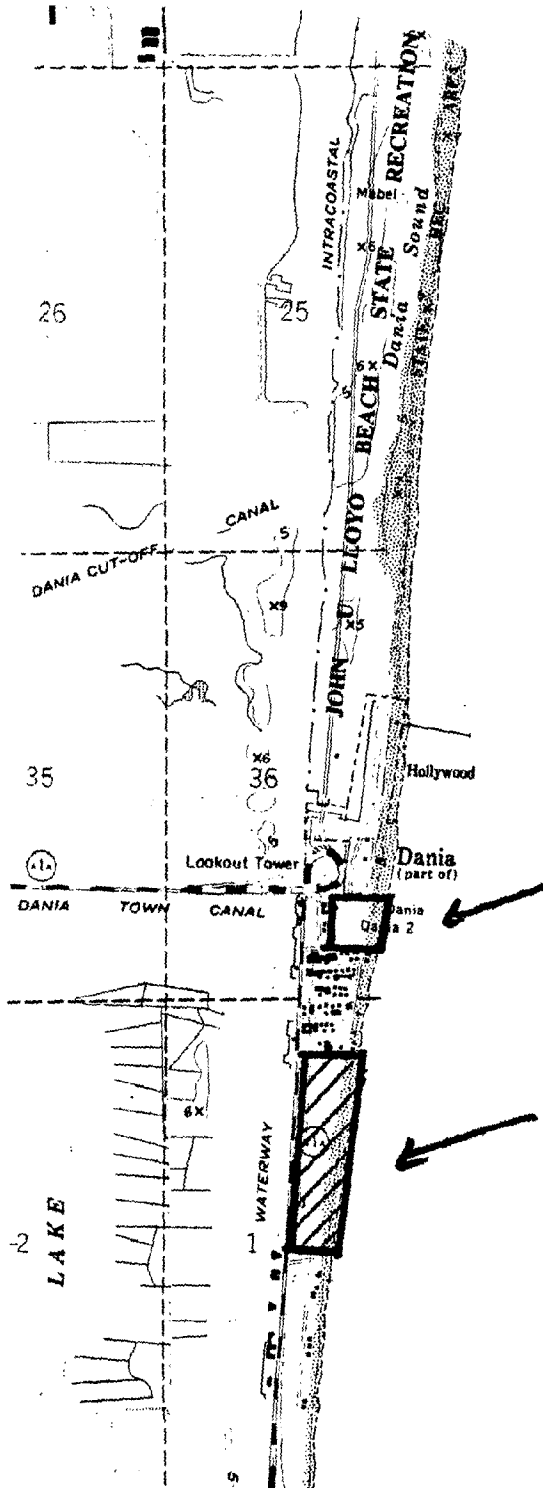
**Disturbance:** scraping of strand vegetation in some areas; moderate invasion of pepper

**Surrounding land use:** residential

**Ownership:** public: Broward County; private: Posner tract

U.S.G.S. QUAD:  
Port Everglades,

**BROW-5**  
Posner Tract and  
North Beach Park



## Coastal Uplands Site Summary

### DADE-1

#### Virginia Key, Dade County, Florida

Approximate acreage: 40

Topographic map: Key Biscayne

Florida D.O.T. aerial photograph: PD2746-14-06 (2/14/85)

Survey date: 17 April 1990 (F90JOH27)

**Physical setting:** broad (4000 ft), low (5 ft) barrier island lying over a mile east of the mainland across Biscayne Bay. Offshore area is very shallow (less than 20 ft deep over a mile offshore) and the narrow, gently sloping foreshore of the beach indicates a low-wave-energy coast. Several closely-spaced groins along the beach indicate previous erosion problems.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) no sea oats dune present. Upper beach has a mixture of pioneer and stable dune species including seashore paspalum (*Paspalum distichum*), beach sunflower (*Helianthus debilis*), beach elder (*Iva imbricata*), and Virginia creeper (*Parthenocissus quinquefolia*).

**coastal strand:** (C) scattered shrubs behind foredune include saw palmetto (*Serenoa repens*), the exotic colubrina (*Colubrina asiatica*), spanish bayonet (*Yucca aloifolia*), coinvine (*Dalbergia ecastophyllum*) and seagrape (*Coccoloba uvifera*).

**maritime hammock:** (A) not too diverse, but intact, low-lying tropical hammock with fair-sized trees and distinct understory. Major canopy species are strangler fig (*Ficus aurea*), seagrape, and mastic (*Mastichodendron foetidissimum*), with occasional cabbage palm (*Sabal palmetto*) and blolly (*Guapira discolor*). Understory trees are spanish stopper (*Eugenia foetida*), marlberry (*Ardisia escallonioides*), and torchwood (*Amyris elemifera*).

**Rare species:** Biscayne prickly ash (*Zanthoxylum coriaceum*) - 4 plants seen in understory of hammock east of parking lots; plus the following plants in a species list for Virginia Key (Avery et al., 1980): broad-leaved spider lily (*Hymenocallis latifolia*), burrowing four o'clock (*Okenia hypogaea*), necklace pod (*Sophora tomentosa*), sea lavender (*Tournefortia gnaphalodes*).


**Disturbance:** most of the island is covered by a pure stand of Australian pine (*Casuarina equisetifolia*); lower-lying areas are invaded by Brazilian pepper (*Schinus terebinthifolius*); the invasive burma reed (*Neyraudia reynaudiana*) occurs sporadically in openings in the hammock zone; foredune area has scattered shrubs of the exotic beach berry (*Scaevola sericea*) and patches of the exotic vining shrub, (*Colubrina asiatica*). Cars are driven along the upper beach, packing the sand.

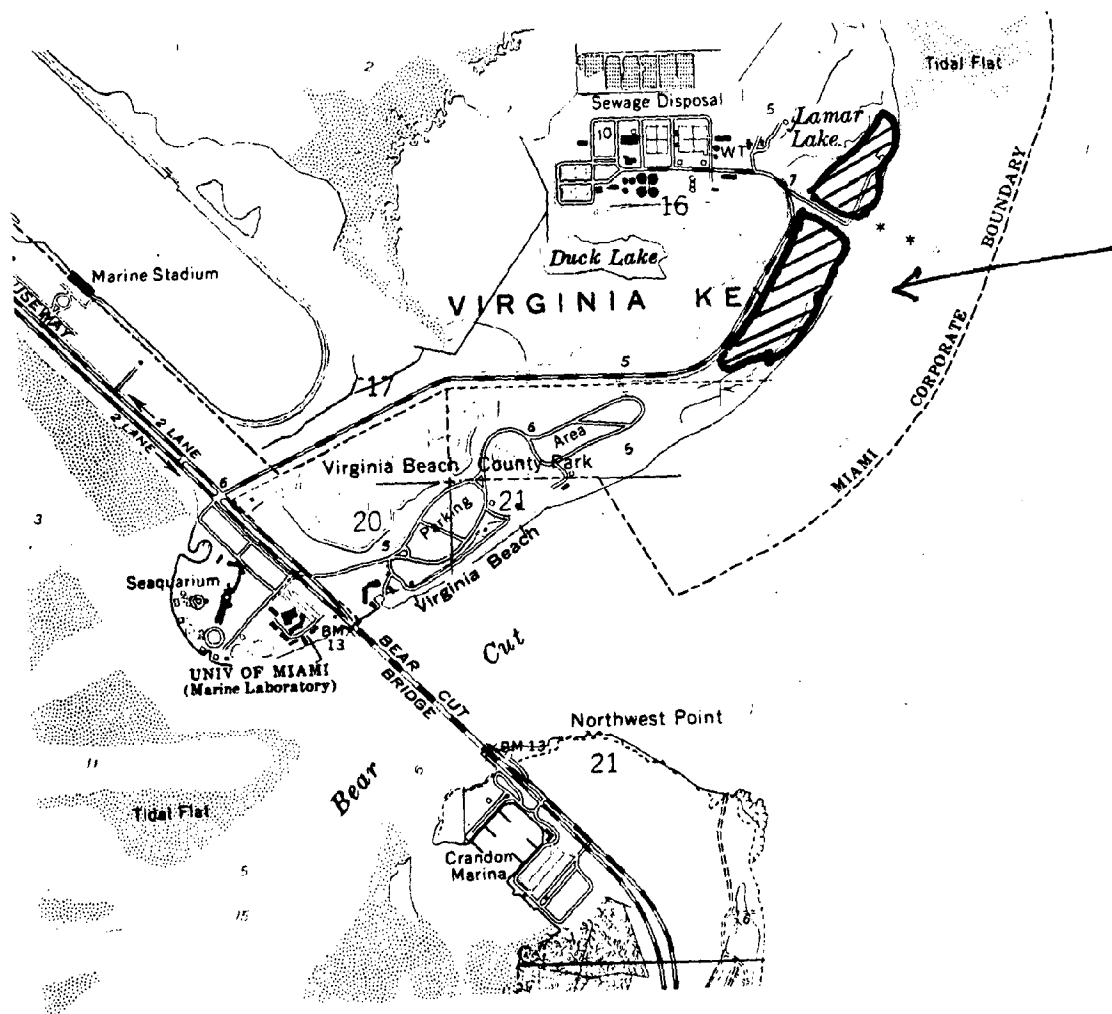
**Surrounding land use:** developed county park to south; sewage treatment plant and mangroves to west; inlet to north; Atlantic ocean to east.

**Ownership:** public: city/county (MetroDade) park.

U.S.G.S. QUAD:  
Key Biscayne, 1969

**DADE-1**  
Virginia Key

 county/ city



## Coastal Uplands Site Survey

### DADE-2

#### Crandon Park, Dade County, Florida.

Approximate acreage: 50

Topographic map: Key Biscayne

Florida D.O.T. aerial photograph: PD2746-13-18 (2/14/85)

Survey date: 16 April 1990 (F90JOH25)

**Physical setting:** northern tip of Key Biscayne, a broad low barrier island two miles east of the mainland across Biscayne Bay. About half the width of the island is made up of mangroves. Fossil black mangrove reef exposed at low tide off northeastern tip.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (B) no sea oats dune on this low-wave-energy coast. Low, narrow upper beach colonized primarily by saltgrass (*Distichlis spicata*), beach tea (*Croton punctatus*), beach sunflower (*Helianthus debilis*), and an exotic species of beach berry (*Scaevola sericea*).

**coastal strand:** (B) narrow zone of shrubs between foredune and hammock zones shows little spray pruning of canopy. Principal species are the exotic *Colubrina asiatica*, saw palmetto (*Serenoa repens*), blackbead (*Pithecellobium keyensis*), and shrubby seagrape (*Coccoloba uvifera*).

**maritime hammock:** (A) young tropical hammock does not yet show much over/understory differentiation. Despite this and the presence of scattered trees of exotic species (*Pithecellobium dulce*, *Manilkara zapota*, *Flacourtia indica*) the forest is diverse and healthy, and barring other disturbance, will probably recover. Major canopy species are strangler fig (*Ficus aurea*), cabbage palm (*Sabal palmetto*), and poisonwood (*Metopium toxiferum*). Understory consists primarily of spanish stopper (*Eugenia foetida*). Moderate invasion of Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*).

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - two sites in disturbed areas of the hammock; *Florida lantana* (*Lantana depressa* var *floridana*) - several plants on upper beach; burrowing four o'clock (*Okenia hypogaea*) - several young plants at south end of beach that borders the hammock area; necklace pod (*Sophora tomentosa*) - several plants in strand zone; Biscayne prickly ash (*Zanthoxylum coriaceum*) - several scattered trees in hammock; plus several plants on park species list (Avery, 1981): golden leather fern (*Acrostichum aureum*); cowhorn orchid (*Cyrtopodium punctatum*), and silver palm (*Coccothrinax argentata*); loggerhead turtle (*Caretta caretta*) - 13 nests/km (Hopkins and Richardson, 1984).

**Disturbance:** Historical accounts indicate the plant cover of the area has changed several times in its history (Lippincott, 1990, pers comm.). Notes of early surveyors in 1851 and 1855 indicate that the entire area from Cape Florida to the northern tip was occupied by saw palmetto. In 1910 the Crandon area was planted to coconuts. In 1988 a fire burned the north end of the hammock increasing the spread of Burma reed (*Neyraudia reynaudiana*), an invasive Asian grass. The present management practice of scooping seaweed off the beach with a heavy vehicle may be compacting the beach sand and removing nutrients, both of which could retard colonization by pioneer beach species.

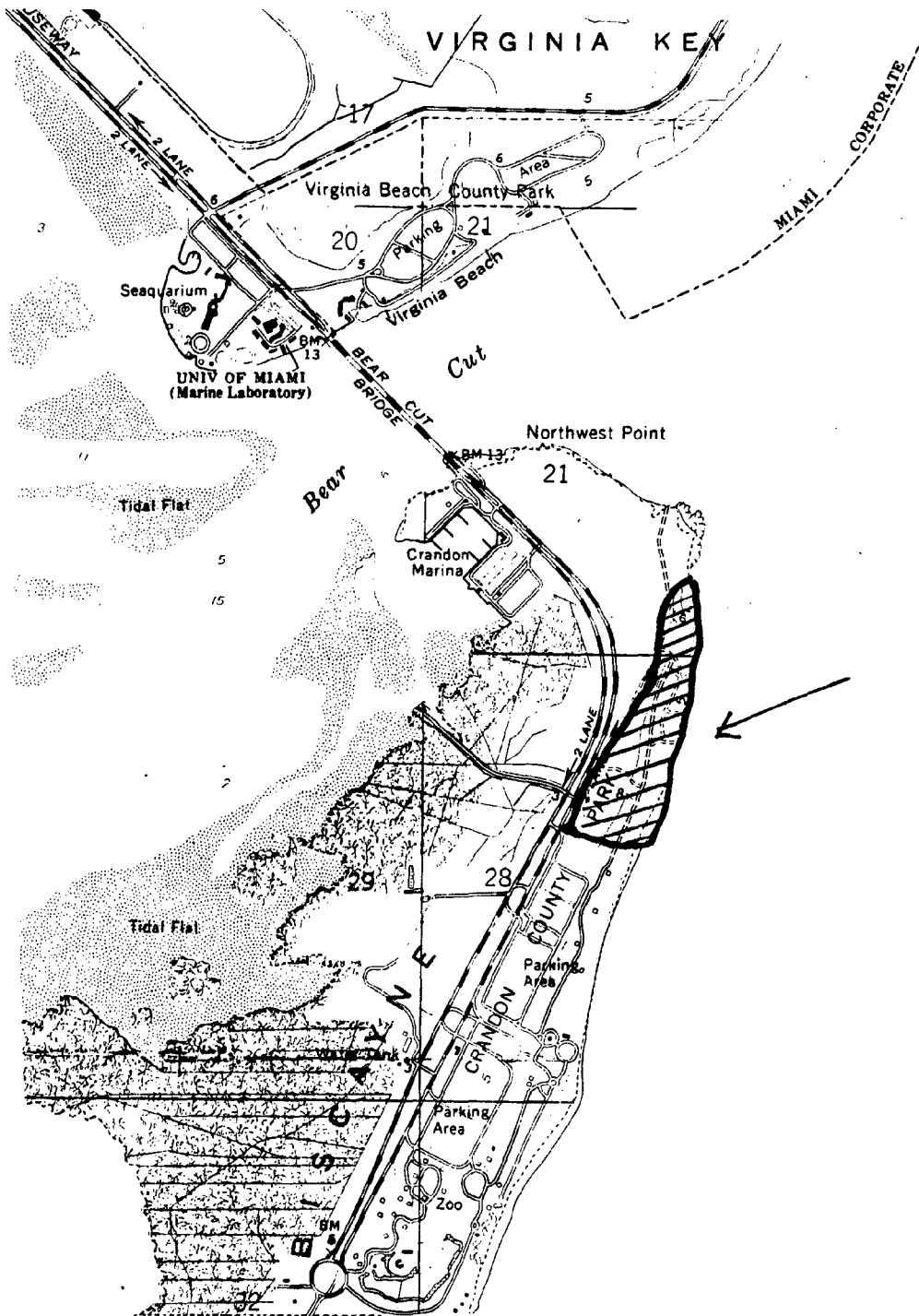
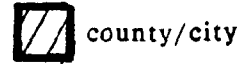
**Surrounding land use:** inlet and mangrove to north; parking lots to south; mangroves to west; Atlantic Ocean to east.

## **Coastal Uplands Site Survey**

**Ownership:** public: city/county (MetroDade park).

U.S.G.S. QUAD:  
Key Biscayne, 1969

**DADE-2**  
Crandon Park



## Coastal Uplands Site Summary

### DADE-3

#### Cape Florida State Recreation Area, Dade County, Florida.

Approximate acreage: 28

Topographic map: Key Biscayne

Florida D.O.T. aerial photograph: PD2746-13-16 (2/14/85)

Survey date: 16 April 1990 (F90JOH26)

**Physical setting:** southern tip of Key Biscayne, a low, broad barrier island two miles east of the mainland across Biscayne Bay. Broad beach has been re-nourished.

**Plant communities:** beach dune, coastal strand, maritime hammock

**beach dune:** (A) broad (100 yd-wide) beach with a broad flat vegetated area behind the sea oats (*Uniola paniculata*) line fringing the beach. Major species in this zone include beach tea (*Croton punctatus*), blue curls (*Trichostema suffrutescens*), beach star (*Remirea maritima*), beach sunflower (*Helianthus debilis*). Unusual species include the hispid ragweed (*Ambrosia hispida*) more common in the Keys, and Florida lantana (*Lantana depressa* var *floridana*). Widely scattered or patchy exotics are periwinkle (*Catharanthus roseus*), beach berry (*Scaevola sericea*), and colubrina (*Colubrina asiatica*).

**coastal strand:** (C) patchy seagrape (*Coccoloba uvifera*) fronting a solid forest of Australian pine behind the beach.

**maritime hammock:** (B) small (ca 20 acre) remnant tropical hammock north of beach parking lot has a nature trail through it. Over/understory not yet well differentiated. Common tree species are strangler fig (*Ficus aurea*), seagrape, and blolly (*Guapira discolor*). Blackbead (*Pithecellobium keyensis*) and spanish stopper (*Eugenia foetida*) are locally common.

**Rare species:** Florida lantana (*Lantana depressa* var *floridana*) - several plants in beach dune area; beach star (*Remirea maritima*) - covers acres behind the sea oats fringe above the beach; broad-leaved spider lily (*Hymenocallis latifolia*) - small patch in hammock; plus the following species on a park list (Popenoe, 1983): silver palm (*Coccothrinax argentata*), necklace pod (*Sophora tomentosa*); loggerhead turtle (*Caretta caretta*) - 13 nests/km (Hopkins and Richardson, 1984); merlin (*Falco columbarius*) - major migration/stop-over area (Neville, 1987); peregrine falcon (*Falco peregrinus*) - adult and immature birds observed regularly from August to October (Neville, 1987).

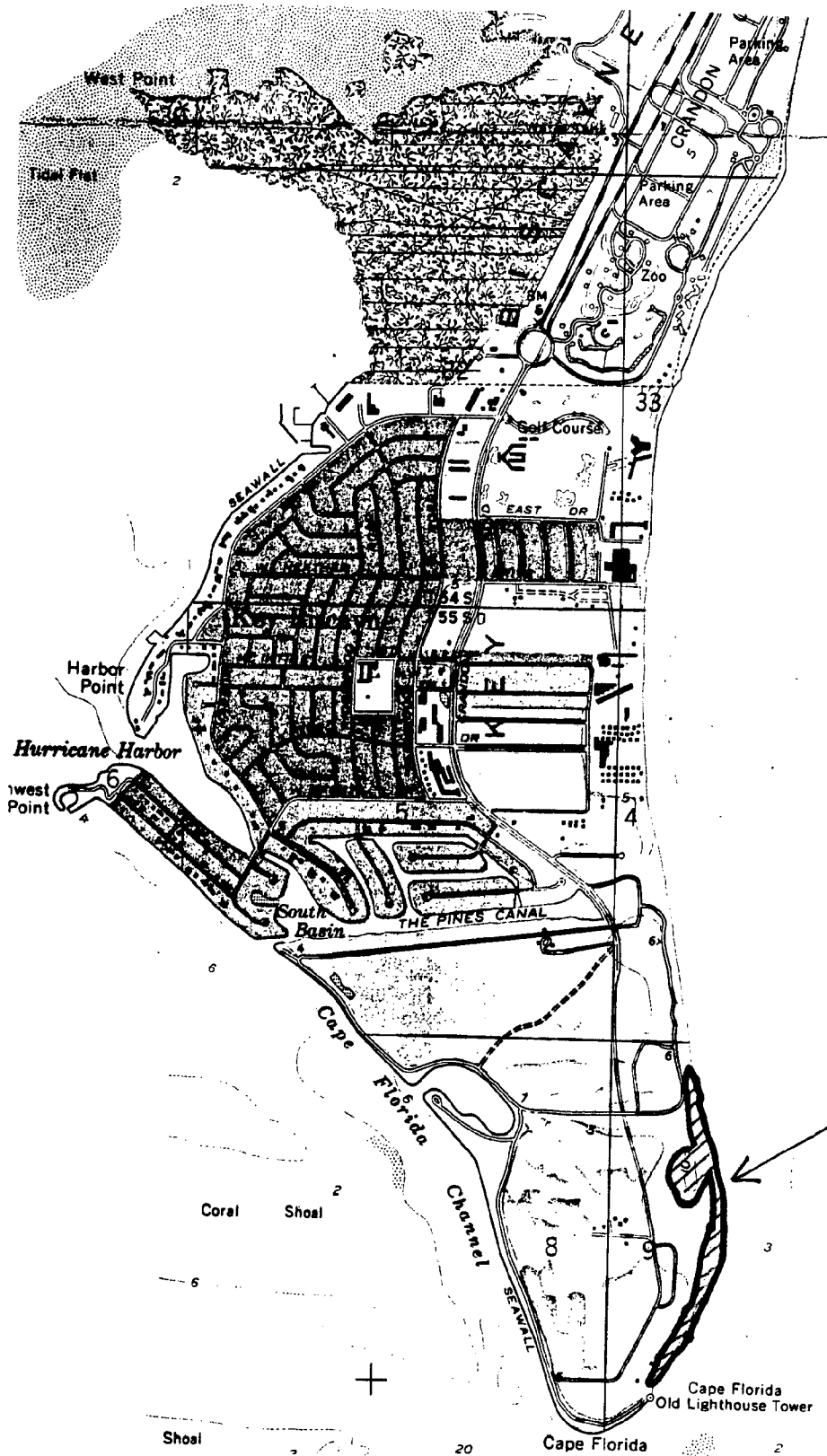
**Disturbance:** Cape Florida's natural ridge and swale pattern was obscured in 1950 when dredge spoil from the Cape Florida channel was placed on it (Pilkey et al., 1984, p234-5). A robust stand of Australian pine (*Casuarina equisetifolia*) now occupies the fill area. No record of the original vegetation remains.

**Surrounding land use:** lighthouse and seawall to south; Australian pine forest to west; residential to north; Atlantic Ocean to east.

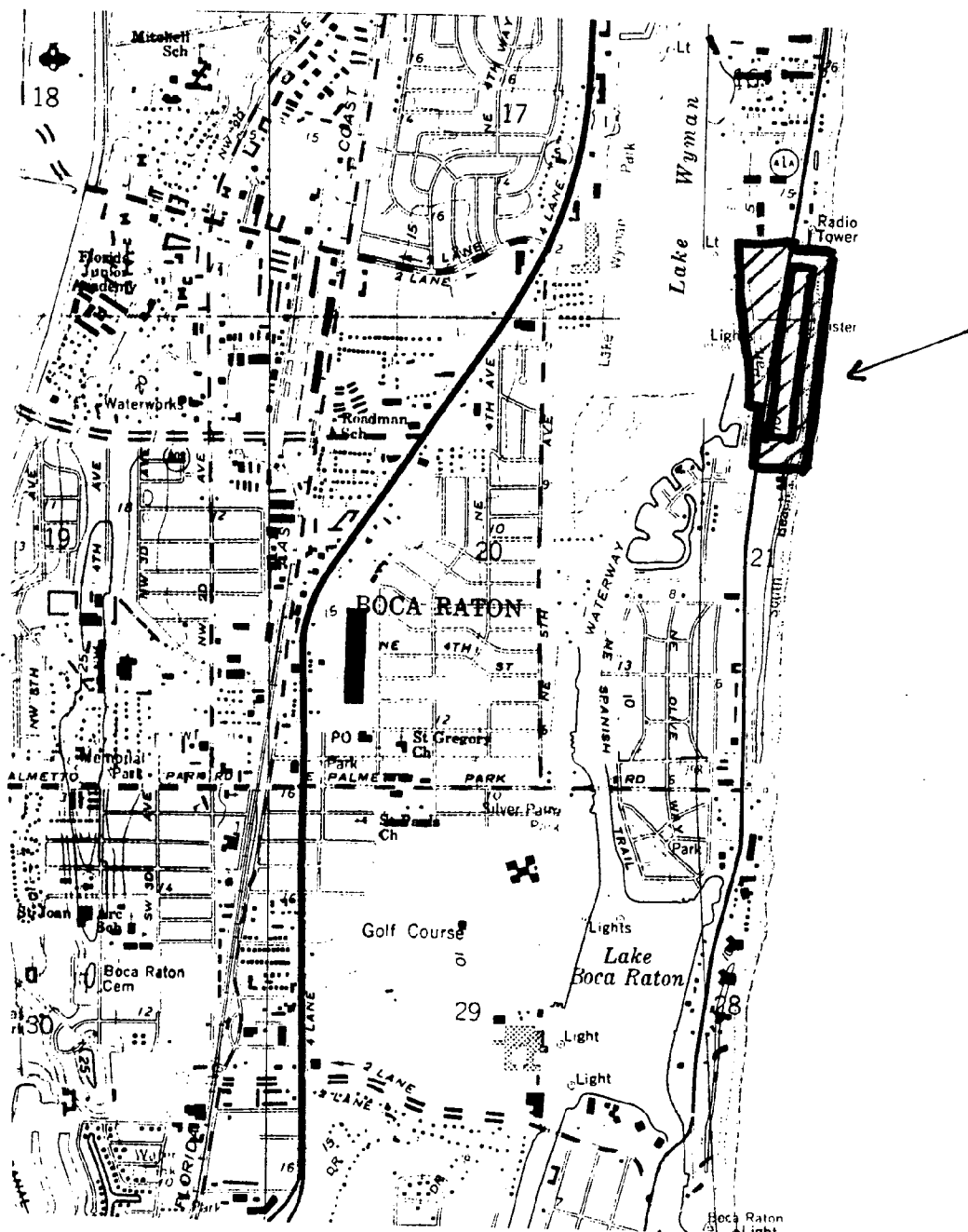
**Ownership:** public: state (State Recreation Area)

U.S.G.S. QUAD:  
Key Biscayne, 1969

**DADE-3**  
Cape Florida  
State Recreation  
Area



**PALM-12**  
Gumbo Limbo  
Nature Center

 city-owned



## **PALM-13**

### **South Beach Park, Palm Beach County, Florida.**

**Approximate acreage:** 30

**Topographic map:** Boca Raton

**Florida D.O.T. aerial photograph:** PD3523-9-05 (4/23/86)

**Survey date:** 6 December 1990 (F90JOH89)

**Physical setting:** steep, narrow ridge, ca 15 ft high, above beach and east of A1A

**Plant communities:** beach dune, coastal strand

**beach dune:** (C) fairly broad beach but no sea oats dune at base of slope

**coastal strand:** (B) patches of native strand forming hedge-like stands along parking lot, interpolated between areas of Australian pine (*Casuarina equisetifolia*). Major components of the strand are blackbead (*Pithecellobium keyensis*), marlberry (*Ardisia escallonioides*), and sea grape (*Coccoloba uvifera*).

**Rare species:** beach jacquemontia (*Jacquemontia reclinata*) - relatively large population in good flower in grassy clearing in strand at north end of parking area; devil's shoestring (*Tephrosia angustissima*; U.S. Fish and Wildlife Service, 1980); loggerhead turtle (*Caretta caretta*) - 66 nests/km (Hopkins and Richardson, 1984).

**Disturbance:** parking lot for park place in strand/hammock transition zone - Australian pine invasion around its edges.

**Surrounding land use:** urban

**Ownership: public:** city of Boca Raton